Vol. XI., No. 8. AUGUST, 1860. New Series, Vol. 2., No. 8.

THE FARMER AND PLANTER

PRICE, $1 A YEAR, ALWAYS IN ADVANCE.

CONTENTS OF AUGUST NUMBER.

OUR FRUIT COMMITTEE ROOM.

In the absence of an *ad interim* Fruit Committee, the Publisher has constituted himself a Committee of one, in conjunction with his better-half, to examine the following Fruits, sent to this office, and have awarded *our* complimentary premiums, for the past month, as follows:

To Mrs. H. Lyons, for specimens of the Honey Peach, which we found really delicious. This Peach is, undoubtedly, one of the finest now grown, and ripening as early as the 25th of June, makes it one of the best to grow for home consumption. We do not think it a desirable variety to cultivate for market, as its skin is so thin that it will not bear transportation.

To Dr. Roach, for very fine specimens of White and Red Roman Nectarines, and the Prune or large Blue Plum. The merits of these Fruits were duly discussed by us, and pronounced very superior. The Doctor is vigorously and successfully prosecuting his enterprise of establishing an orchard for raising fruit for the Northern markets. We have been informed that he has shipped to New York a very large quantity of Peaches, Plums and Nectarines, which have yielded him very remunerating profits. He certainly deserves great praise for his enterprise.

To our friend, Maj. R. A. Springs, of Rock Hill, we award a premium of best thanks for a box of most excellent fruit, of almost all kinds, which came to hand just as we had written the above, and we regret that our space will not permit us to notice them as we wish.

Our Committee Room will be open, as well as the mouths of our little folks, for the reception of such favors, during the fruit season. If possible, the names of the fruit should be sent with them.

DEFERRED NOTICES.

We are compelled to defer our notice of "Tau Kwang, or Five Years in China," until our next issue. In the mean time, we would advise our readers to send to Messrs. Townsend & North for a copy. It is a very interesting work. Price $1.00.

The awards of Premiums, for subscriptions to the *Farmer and Planter*, will also appear in the September number, when we hope to have the Premiums ready for delivery.

STATE AGRICULTURAL FAIRS FOR 1860.

Kentucky, at Bowling Green, Sept. 18 to 22.
Alabama, at Montgomery, Oct. 29 to Nov. 2.
St. Louis, at St. Louis, Oct. 24 to 27.
Mississippi, at Jackson, Nov. 6 to 9.
South Carolina, at Columbia, Nov. 13 to 16.
South Carolina Institute Fair, November.
Cotton Planter's Convention, at Macon, Ga., Dec. 3 to 29.

DISTRICT FAIRS, IN SOUTH CAROLINA, FOR 1860.

Newberry, at Newberry C. H.
Edgefield, at Edgefield C. H., Oct. 11 to 12.
Bethel, at Woodruff's, Spartanburg, Oct. 18.
Fairfield, at Winnsboro', Oct. 25 to 26.
King's Mountain, Nov. 6.
Lexington, at Lexington C. H.
Laurens, at Laurens C. H.
Indian Land, at Rock Hill.
Fishing Creek.
Black Oak, at Black Oak.
Darlington, at Darlington C. H.
Winyaw and All Saints.

The above are all the Societies we can now remember in the State. If any are omitted, the Secretaries will please inform us, with the time and place of Meeting. Our object is to make the list complete and accurate.

VOL. XI. AUGUST, 1860. NO. 8

R. M. STOKES, PROPRIETOR. COLUMBIA, S. C. NEW SERIES VOL. 2, NO. 8

GENERAL CONSIDERATIONS ON MANURES.

By Samuel W. Johnson, *Chemist of the Connecticut State Agricultural Society.*

1. *What are manures?*

Manures are substances which are incorporated with the soil for the purpose of supplying some deficiency in the latter. However numerous and different may be the materials which assist the growth of plants, judging them by their origin, external characters and names, chemistry has, in late years, demonstrated that they all consist of only about a dozen forms of matter, which will be specified below.

2. *How manures act.*

Manures may act in three distinct ways.

I. *They may enter the plant as direct nutriment.* Carbonic acid, water, ammonia, or nitric acid, sulphuric acid, phosphoric acid, silica, oxyde of iron, chlorine, lime, magnesia, potash, and soda, are the elements of vegetable nutrition—theessential plant-food.

In a fertile soil all these materials are accessible to the plant. If one of them be absent, the soil is barren; if a substance that contains the missing body be applied to the soil, it makes the latter fertile.

II. *Manures may act partly as solvents or absorbents,* and thus indirectly supply food to the plant, e. g., lime, gypsum, salts of ammonia, &c.

Soils are infertile not only from the absence or deficiency of some one or more of the above named forms of plant food, but also for other reasons.—The food of the plant must be soluble in water, so as thus to be transmitted into the plant as rapidly as needed. Soils are often unproductive, because the stores of plant-food they contain are locked up in insoluble forms. Lime, guano, the products of the decay of vegetable matters, often fertilize a field merely by their solvent action on the soil. Gypsum acts as an absorber or fixer of ammonia.

III. *Manures improve the physical character of the soil,—i. e.,* make it warmer, lighter, or heavier, more or less retentive of moisture, &e. Such are some manures, that are often applied in large quantity, as lime, marl and muck.

A soil is often barren, not because it has no supplies of nutriment for the plant, neither for the reason that those supplies are insoluble; but because the soil itself is so wet or dry, so tenacious and impenetrable, or so light and shifting, that vegetation fails to find the physical conditions of its growth and perfection.

Almost all our ordinary fertilizers exercise, to a greater or less degree, all these effects. Thus lime, on a clay soil, may—

1st. Mechanically destroy the coherence and tenacity of the clay, and give it the friability of a loam.

2d. Chemically decompose the clay, making potash, soda, ammonia, &c., soluble; and—

3d. Be directly absorbed and appropriated by the plant.

3. *Exhaustion of the soil by cropping, and renovation by weathering.*

Under cultivation, there is removed from the soil by each crop a greater or less quantity of plant-food. The stores of nutriment in the soil thus continually become smaller and smaller.

By the action of the atmosphere (weathering,) assisted by pulverization of the soil, (tillage,) the insoluble matters of the soil are gradually made soluble and available to vegetation.

There is thus constantly going on in the soil an exhausting, and, as constantly, a renovating process. In most soils, under ordinary cultivation, the exhaustion or removal of plant-food proceeds more rapidly than the supply by weathering. Such soils, therefore, tend to become unproductive. In a few cases, the solution of the materials of the soil itself goes on so rapidly that there is always present in them an excess of all the matters requisite to nourish vegetation. These soils are inexhaustible.

To assist in maintaining the first class of soils in a state of productiveness, manures are employed.

4. *Comparative agricultural value of different fertilizers.*

It is obvious, from the foregoing considerations, that manures are required to exercise very different

functions in different cases, according to the character of the soil, as determined by its origin and by its previous treatment. The soil itself is constantly changing under culture, so that what is useful on my neighbor's soil, that has been tilled and cropped for twenty years, may be quite valueless on mine, which is just reclaimed from the forest. What benefits my soil this year, may be of no perceptible advantage next year.

In how far manure is needed for the special purpose of supplying the soil with food for vegetation, it is often difficult to decide. If a new and good soil is repeatedly cropped, until it ceases to yield remunerative returns, it may be that addition of some *one* substance, lime, or potash, or sulphuric acid, will restore its fertility. It more often happens that *several* bodies are deficient; but *what* is deficient can only be certainly learned by actual trial. In any special case that substance is most valuable as a manure, (in so far as the *direct* nutrition of the plant is concerned,) which is most deficient in the soil in accessible form.

As regards the indirect action of manures, in virtue of their absorbent or solvent powers, and as regards their effects in meliorating the texture and other physical characters of the soil, practical men have established certain rules, founded on extended experience, which it is not needful to recapitulate here.

Thus much is certain: that one fertilizing agent has no absolute and invariable superiority over another, for all are equally indispensable. The superiority that any one manure may be reputed to possess, depends upon circumstances. Circumstances are exceedingly various and continually changing. The reputation and local value of manures is equally various and changing.

In some regions, as in certain districts of Pennsylvania, *lime* is considered the best manure. In numerous localities, *plaster* (sulphuric acid and lime,) is depended upon. In some districts, superphosphate of lime, in others, Peruvian guano, is almost exclusively used.

Among the substances essential to vegetation, there are some which almost never fail from the soil. Thus, oxyd of iron and silica are present in every soil. Lime and sulphuric acid may often be wanting. Potash and soda are not unfrequently deficient. Available ammonia and phosphoric acid are likewise often liable to exhaustion.

Ammonia and phosphoric acid, which possess the highest commercial value among fertilizers, have been considered by some, whose opinions are of weight in the agricultural world, to possess also a decidedly greater *agricultural* value than other manures. It is asserted that in the growth of certain crops, and, in fact, those crops which best remunerate the farmer, these substances are most rapidly exhausted from the soil. Now it is undoubtedly true, that on the soils in certain districts, and in certain courses of cropping, the application of ammoniacal and phosphatic manures produce the most striking results; yet it is by no means proved, or even probable that, on the whole, all soils, and all systems of cropping included, these bodies are oftener lacking, or oftener and more permanently useful, than some of the other fertilizing substances.

5. *What manures are most often and most generally useful?*

While we cannot accord to any simple manure, or to any single ingredient of a manure, a universal fertilizing superiority, it is true that some manures are more useful than others, on account of their compound natures. The more ingredients a manure can supply to vegetation, the more useful it is. Stable manure is the universal and best fertilizer, because it contains everything which can feed the plant. Swamp muck, straw, and vegetable refuse, generally, are of similar character. Fertilizers, like lime, plaster, salt, &c., which contain but a few ingredients, cannot, in general, be depended upon for continuously maintaining the fertility of the soil.

6. *Uses of special or partial manures.*

Special manures, i. e., manures which contain some one or few ingredients, are of use, very rarely, as the farmer's chief reliance, but often as adjuncts to stable manure. Several special manures may often be so combined as to make an effectual substitute for stable manure. In high-farming, and in market-gardening, and generally where circumstances admit of raising the most exhausting crops without fallow, laying down to grass, or rotation of any sort, special manures are most advantageously employed. In ordinary mixed farming, they are useful in assisting to reclaim or improve poor lands; but in the best practice, they play as yet a very subordinate part, unless peculiar circumstances make them extraordinarily cheap.

7. *Comparative commercial value of manures.*

The commercial value of a manure is measured by its price, and may be quite independent of its real agricultural value: though it usually depends considerably on its *reputed* Agricultural value.—The scarcity of a substance, the cost of preparation and transportation, the demand for it on account of other than agricultural uses—all these considerations, of course, influence its price. It is commercially worth what the dealer can get for it, so much per bushel or ton.

8. *Valuation of manures.—What substances are to be regarded as commercially important in costly manures.*

In any fertilizer which is sold as high or higher than half a cent a pound, there are but three ingredients that deserve to be taken account of in estimating its value. These are ammonia, phosphoric acid and potash. Everything else that has a fertilizing value may be more cheaply obtained under its proper name. If the farmer needs sulphuric acid he purchases gypsum; if he needs soda, common salt supplies him. Everything but these three substances may be procured so cheaply, that the farmer is cheated if he pays ten dollars per ton for a manure, unless it contains or yields one or all of these three substances in considerable proportion.

9. *Mechanical condition of manures.*

Nothing is so important to the rapid and economical action of a manure as its existing in a finely pulverized or divided state. All costly fertilizers ought to exist chiefly as fine, nearly impalpable, powders, and the coarser portions, if any, should be cap-

able of passing through a sieve of say eight or ten holes to the linear inch. The same immediate benefits are derived from two bushels of bones rendered impalbably fine by treatment with oil-of-vitriol, ten bushels of bone-dust, and one hundred bushels of whole bones. Fineness facilitates distribution, and economizes capital.

10. *Chemical condition of manures—State of solubility, &c.—Ammonia, potential and actual—Phosphoric acid, soluble and insoluble.*

The solubility of a manure is a serious question to be considered in its valuation. We are accustomed to speak of ammonia as existing in two states, viz: *actual* and *potential*. By actual ammonia, we mean ready-formed ammonia; by potential ammonia, that which will result by decomposition or decay—"that which exists in possibility, not in act." Now the former is almost invariably soluble with ease in water, and is thus readily and immediately available to plants; while the latter must first become "actual" by decay, before it can assist in supporting vegetation.

In Peruvian guano, we have about half of the ammonia ready formed, and easily soluble in water, the remainder exists in the form of uric acid, which yields ammonia by decay in the soil, but may require weeks or months to complete the change. In leather-shavings, or woolen rags, the ammonia is all potential, and as these bodies decay slowly, they are of less value than guano as sources of ammonia. Oil-cake, (linseed and cotton-seed,) contains much potential ammonia, and in a form that very speedily yields actual ammonia.

We do not know with what precise results the process of the decay of ammonia-yielding bodies is accomplished in the soil. Out of the soil such bodies do not give quite all their nitrogen in the form of ammonia; a portion escapes in the uncombined state, and thus becomes unavailable.

Phosphoric acid may occur in two different states of solubility; one readily soluble, the other slowly and slightly soluble in water. The former we specify as soluble, the latter as insoluble phosphoric acid. In Peruvian guano, we find 3.5 per cent. of soluble phosphoric acid, existing there as phosphates of ammonia and potash. The remaining 10 to 12 per cent. is insoluble, being combined with lime and magnesia. In most other manures, genuine superphosphates excepted, the phosphoric acid is insoluble.

Among those phosphates which are here ranked as insoluble, there exist great differences in their availability, resulting from their mechanical condition. The ashes of bones, and the porous rock-guano, when finely ground, exert immediate effect on crops, while the dense, glassy, crystalized phosphorite, of Hurdstown, N. J., and the fossil-bones, (so-called coprolites of England,) are almost or quite inert, unless subjected to treatment with oil-of-vitriol.

11. *The reasonable price of phosphoric acid, ammonia and potash.*

I. *Insoluble phosphoric acid.* There are several substances now in market which, as fertilizers, are valuable, exclusively on account of their content of phosphoric acid; which, moreover, are at present the cheapest sources of this substance that possess the degree of fineness proper to an active fertilizer. These substances are the phosphatic guanoes, (Columbian and American guano,) and the refuse bone-black of sugar refineries. From them we can easily calculate the present lowest commercial value of phosphoric acid. If we divide the price per ton of Columbian guano, $35, by the number of pounds of phosphoric acid in a ton, which, at 40 per cent., amounts to 800 pounds, then we have the price of one pound as nearly $4\frac{1}{3}$ cents.

Refuse bone-black may be had for $30 per ton; it usually contains 32 per cent. of phosphoric acid. The same division as above gives us $4\frac{2}{3}$ cents as the cost of phosphoric acid per pound.

In this report, I shall adopt the average of these figrues, viz: $4\frac{1}{2}$ cents, as the reasonable price of insoluble phosphoric acid.

Phosphoric acid is much cheaper in crushed bones; but this material is not in a suitable state of division to serve as the basis of a fair estimate.

II. *Soluble phosphoric acid.* This is nearly always the result of a manufacturing process. Prof. Way, Chemist to the Royal Agricultural Society of England, estimates its worth at $10\frac{1}{2}$ cents per lb.—Dr. Voelcker, of the Royal Agricultural College of England, and Stoeckhardt, the distinguished Saxon Agricultural Chemist, reckon it at $12\frac{1}{2}$ cents per lb. They have deduced these prices from that of the best commercial superphosphates. In this report the price will also be assumed at $12\frac{1}{2}$ cents. This, I believe, is considerably more than it is really worth, but it is probably the lowest rate at which it can now be purchased.

III. *Actual ammonia.* The cheapest commercial source of this body is Peruvian guano. Although it contains several per cents of potential ammonia, yet the latter is so readily converted into actual ammonia, that the whole effect of the manure is produced in one season, and, therefore, we may justly consider the whole as of equal value with actual ammonia.

Good Peruvian Guano contains:

2 per cent., or 40lbs per ton of potash.
3 " 60 " " soluble phosphoric acid.
12 " 240 " " insoluble " "
and yields
16 per cent., or 320lbs per ton of ammonia.

If we add the values of the potash, (see next page,) and of the phosphoric acid, soluble and insoluble, and subtract the same from the price of guano we shall arrive at the worth of the ammonia—as follows:

$40\times4=\$1.60$, $60\times12\frac{1}{2}=\$7.50$; and $240\times4\frac{1}{2}=\$10.80$; total, $19.90.

$65.00—$19.90=$45.10, the value of 320lbs of ammonia.

$45.10\div320=14$ cents nearly, the value of one pound.

This price, 14 cents per pound, will be employed in this report.

IV. *Potential ammonia.* The value of this varies so greatly, being, for example, as uric acid in gu-

ano, not inferior to actual ammonia, while in woollen rags it is not worth more than one half as much, that we can fix no uniform price, but must decide what it shall be, in each special case separately.

V. *Potash.* The value of potash is difficult to estimate, because it may vary exceedingly, according to circumstances. Wood ashes are its chief sources; these are poor or rich in potash, according to the kind of tree that yields them, and the soil on which it has grown. It may vary from five to twenty per cent. Stoeckhardt, who estimates the value of ammonia at twenty cents, makes potash worth four cents per pound. The price of potashes cannot serve as a guide, for they are never used for agricultural purposes. Four cents is certainly high enough for this country, if it is correct for Germany.

12. *Potash may be usually neglected.*

Most concentrated manures contain very little or no potash. In guano it rarely exceeds three per cent. Superphosphate of lime can contain none of consequence. Potash cannot be economically added to manufactured manures, because nearly pure potash, or even the raw material from which it is extracted, viz: wood ashes, has a higher commercial value for technical than for agricultural purposes. Besides, potash is not *generally* deficient in soils, and, therefore, farmers do not wish to pay for it as an ingredient of costly manures. It is only when a manure is professedly sold as containing much potash, that this ingredient deserves to be taken account of in its valuation.

13. *Computing the money-value of concentrated manures.*

In what immediately precedes, is contained the data for calculating *approximatively* the price that can be afforded by a high priced manure, if we have before us the result of a reliable analysis. The actual calculation is very easy, and has been illustrated already in deducing the value of ammonia from Peruvian guano. We give here a *resume* of the prices adopted in this report, viz:

Potash, per pound, - - - - -	4 cents.
Insoluble phosphoric acid, per lb, -	4½ "
Soluble " " " - -	12½ "
Actual, and some forms of potential ammonia, - - - - - -	14 "

As further example of the calculation, here may follow the details of the valuation of a superphosphate of lime. Analysis gave the following per centage:

Actual ammonia, - - -	2.39, say	2.4
Potential, - - - - -	1.06, "	1.0
Soluble phosphoric acid, - -	2.56, "	2.6
Insoluble, - - - - -	22.98, "	23.0

Multiplying the per centage of each ingredient by its estimated price, and adding together the products thus obtained, gives the value of 100lbs; this taken twenty times, gives us the worth of a ton of 2000lbs.

In the case before us, the quantity of potential ammonia is so small that we may reckon it with actual ammonia without materially influencing the result. Thus,

2.4+1.0=3.4; 3.4×14 = .48, value of ammonia in 100lbs.
2.6×12½= .33, value of soluble phosphoric acid in 100lbs.
2.3×04½=$1.03, value of insoluble phosphoric acid in 100lbs.

$1.84 total value of 100 lbs.
20

$36.80 value of one ton.

It is not claimed that this method of valuation is more than rough and approximate. Usually the price demanded is more than that obtained by calculation. In case of the superphosphate just mentioned, the selling price is $45. There is no doubt that it ought to be better for that money. The farmer must decide for himself whether he can get the same fertilizing materials more cheaply. If he cannot, he may purchase such a superphosphate. For *comparing the worth of different fertilizers* this method of computation is of great value, as will be seen further on, where will be found tables giving the calculated values of all the high-priced manures that have come into my hands officially, during the last two years.

It is but just to mention here, that this method of estimating the value of fertilizers was first proposed nine years ago, by Dr. J. A. Stoeckhardt, Professor of Agricultural Chemistry in the Royal Academy of Agriculture and Foresty, at Tharand, near Dresden, in Saxony, and has been adopted in principle by the chemists of the Agricultural Societies of Great Britain.

The estimates I made in 1856 were much lower than those now given. The price of manures has advanced since that time, (Peruvian guano $10 per ton,) and the prices I then proposed for phosphoric acid were too small. All the estimated values in this report are founded on the prices just given,

14. *Estimation of the value of cheap manures.*

The method of valuation above described is not applicable to cheap manures, which contain but little ammonia or phosphoric acid. Their value often depends more upon the mechanical and chemical condition of their ingredients, than upon the quantity of any one. The few manufactured manures of this sort, may best be compared with some fertilizer of standard commercial value, viz: stable manure, leached ashes, &c. Under the head "Poudrette," examples will be given.

REPORT OF P. T. TYSON, ESQ., MARYLAND STATE AGRICULTURAL CHEMIST, ON GUANO.

Maryland was the pioneer State in the use of guano in this country.

According to my recollection, the first trial of it in the State was by Capt. Abel S. Dungan, of a few bags brought by him from Peru, and applied to a part of his corn crop. This, I think, was about the year 1832, and soon after the importation of it by the cargo commenced.

The good effects of this manure upon exhausted soils, brought it rapidly into use, and the high price it reached, induced enterprising persons to search for it, especially upon those small coral islands whose only inhabitants are birds. The results of this activity brought into notice the various kinds of guano now sold by the dealers.

All of those that can be had in considerable quantity, are sold in Baltimore, which continues to be the leading guano market in this country.

In estimating the value of any guano to the farmer we may disregard all its constituents except ammonia and phosphoric acid. The value of some of them depends principally upon their large proportion of ammonia. Others, containing no ammonia, are valuable for their phosphoric acids alone.—There are some, again, which contain available proportions of both of these matters, so important to the farmer.

We may, therefore, divide the guanos now accessible to our agriculturists into three genera or groups.

1.—Ammoniated Guano.

The only species of this kind is Peruvian Guano, containing from 7 to 18 per cent of ammonia.

2.—Phosphatic Guano.

Containing phosphoric acid equal to from 16 to 90 per cent. of phosphate of lime.

Of this, the species recognized in the official advertisements of the State Inspector are—

Mexican,	White Mexican,
Colombian,	Brown Colombian, or
Sombrero,	Nevassa.

3.—Ammonia—Phosphatic Guano.

California.

Containing from 3½ to 10 per cent. ammonia with equally varying proportions of phosphate of lime, or its equivalent in phosphoric acid.

African.

Containing variable quanties of ammonia and phosphate of lime.

Before further considering these guanos, I beg leave to present a number of results of analysis by different eminent chemists.

The first series are selected from a large number of analyses by my friend, Dr. Piggot, and are contained in the following communication with which he has favored me. There is also one included from my friend Dr. C. Morfit, formerly of Baltimore, but now residing in New York:

Baltimore, Dec. 16th, 1859.

P. T. Tyson, Esq., State Agricultural Chemist;

Dear Sir:—In reply to your inquiries concerning the results of my examination of the different guanoes brought to this market, I submit the following statement.

1.—Brown Mexican Guano.

These guanoes have evidently been formed from the excrements of birds, which have lost their ammoniacal salts by evaporation in the hot sun, and by solution in the heavy rains that fall in the region from which they are obtained. The small islands called "Keys," upon which they are found, have often an indistinct basin shape, inclining in every direction towards the centre. In consequence of this form, much of the guano is washed, during the rain, into hollows where it is gathered.

The color of this guano varies from a pale fawn-yellow to a deep chocolate brown, the difference appearing to be due to the varying quantities of humus present in the different varieties. All the genuine lime guanoes, no matter how dark they may be, leave a pure white ash, if thoroughly burned, which sufficiently establishes the organic nature of the coloring matter. I have been told by sea-captains who have brought in this dark guano; that it was collected among the thickets of bay cedars which are found upon many of the islands of the Caribbean Sea. Most of these brown guanoes also contain notable quantities of fibrous roots, another evidence of the origin of their color. There are, however, dark-colored soft guanoes, which owe their tint to the large mixture of iron among them.—These contain little or no lime, being made up almost entirely of phosphate of iron. Their contents are very variable, especially in the proportion of phosphoric acid, as will be seen by the analysis which I shall presently quote. The following tables will give an idea of the constitution of this article:

	I.	II.	III.	IV.	V.
Water,	32.51	29.28	24.89	13.11	22.98
Organic matter,	9.35	12.53	20.93	35.49	11.06
Sand,	0.66	0.21	0.12	1.09	trace
Lime,	28.56	28.21	26.89	20.86	30.78
Magnesia,				3.85	
Phosphoric acid,	16.32	16.68	24.34	16.16	31.22
Chlorine,				2.25	
Carbonic acid and other ingredients not estimated,	12.60	13.09	2.84	6.19	3.96
Equivalent of phosphoric acid in bone phosphate of lime.	35.36	36.14	52.74	35.01	67.64

Of the above, No. I. represents a cargo imported in August, 1854; No. II., the cargo of the "Susan," which came in the following September; No. III. the cargo of the "Mary," imported in 1855; No. IV is a sample of a deposit examined to determine its value, and No. V. is a sample of a cargo imported in 1855, and marked by the inspector "Brown Mexican AA.," but owing its richness to the presence of lumps of Columbian guano intermixed with it.—Of the dark iron guanoes, the following, a sample from a small cluster of island, near the South American coast, called the "Brothers," may be taken as an example.

Water,	16.06
Organic matter,	22.92
Sand,	19.68
Phosphate of lime,	9.01
" " magnesia,	2.86
" " iron,	27.19
Carbonate of lime,	5.95
Net estimated,	2.33
	100.00

Some of these ferruginous guanoes contain not a trace of lime or magnesia, others are remarkable for the presence of considerable quantities of sulphate of lime or gypsum. An example of this will be found in the following analysis of the sample of a cargo from Patagonia, brought into Norfolk in the summer of 1858:

Water and organic matter,	31.34
Silicates insoluble in hydrochloric acid, (containing of ammonia—1.31.)	34.45
Lime,	5.56
Magnesia,	trace
Alumina,	13.66
Oxide of iron,	3.71
Phosphoric acid,	5.51
Sulphuric acid,	4.21
Alkaline salts,	0.41
	99.85

The combination of the bases and acids is as follows:

Sulphate of lime,	7.98
Phosphate of lime,	4.85
" " alumnia,	6.38

Of the insoluble silicates above mentioned, only 10.68 escaped solution in caustic potash, so that a large amount of the silica present is soluble in that reagent.

Another guano somewhat resembling this, but of greater value, was brought here from Soldanha bay, Africa, in 1854. I analyzed a sample of it with the following results:

Water,	17.06
Organic matter,	7.89
Sand,	39.59
Lime,	9.56
Phosphoric acid,	17.54
Iron, Alumina, magnesia, (not estimated,)	8.46
	100.00

The phosphoric acid is equivalent to bone phosphate of lime, 38.10

In another guano of this soft variety, sulphate of lime is present in large quantity, but the phosphate of that earth is more abundant than in the Patagonian above described. Of this variety, the following analysis of a sample from Portland Bay, Cape Colony, Africa, will furnish a good example:

Water,	21.37
Organic matter,	10.44
Phosphate of lime,	40.24
Sulphate of lime,	9.88
Sand,	0.61
Iron, alumina, alkalies, &c., (not estimated,)	17.46

Jarvis Island guano is another of these gypseous phosphates, as the following analysis of the sample of a cargo imported into New York will show:

Sulphate of lime,	76.72
Phosphate of lime,	16.53
Phosphate of magnesia,	1.65
Sesquioxide of Iron,	2.71
Alumina,	0.85
Chloride of pottassium,	0.05
Chloride of sodium,	0.67
Sand,	1.22
	99.40

The term, "Mexican guano," is not strictly applicable to all the different varieties above described, but I have had no choice in the use of it, all the soft phosphatic guanoes below 65 per cent. of bone phosphate, from whatever source they may have been derived, being known by that name in this market.

WHITE MEXICAN GUANO.

This title was originally given to a very light colored guano, consisting chiefly of porous lumps, of low specific gravity, but it has since been applied to all guanoes that exceed 65 per cent. of bone phosphate of lime, which is the highest standard of Brown Mexican. The most characteristic specimens of this variety are those which were formerly brought from Pedro Keys, and the following analysis, made of a lump selected by myself from one of the cargoes, will give a good idea of its composition:

Water,	3.80
Organic matter,	7.10
Lime,	43.91
Magnesia,	trace
Phosphoric acid,	37.12
Sulphuric acid,	trace
Chlorine,	trace
Sand,	0.11
Iron, alumina, and other substances not estimated,	7.25
	100.00

The calculated amount of bone phosphate of lime 80.53, is so near the sum of the lime and phosphoric acid (81.03) that the guano may be considered a phosphate of lime containing a few impurities.

This analysis, however, must not be supposed to represent the value of actual cargoes of this article. Very few of them reach so high a grade; the average per centage of those I have analyzed, usually varying between 65 and 75 of bone phosphate.—Many of the guanoes recently brought in and sold under this name, are, in reality, common soft guano mixed with fragments of hard guano, which raises their per centage as in the case I have cited in analysis No. 1.

(CONCLUDED IN OUR NEXT.)

LIVING TOO HIGH.—Mr. Hume hit the mark when he stated in the House of Commons—though his words were followed by "laughter"—that the tone of living in England is altogether too high. What was true of the "mother country," is emphatically true of the present "day and generation" Republicans. Middle-class people are apt to live up to their incomes, if not beyond them; affecting a degree of "style" which is most unhealthy in its effect upon society at large. There is an ambition to bring up boys as gentlemen, or rather "genteel" men; though the result frequently is only to make them gents.—They acquire a taste for dress, style, luxuries and amusements, which can never form any solid foundation for manly or gentlemanly character; and the result is, there is a vast number of gingerbread young gentry thrown upon the world, who remind one of the abandoned hulls sometimes picked up at sea, with only a monkey on board.

BAREFOOTED NOTES ON SOUTHERN AGRICULTURE.

BY AN OLD GRUMBLER.

NO XI.

THE POA SUB FAMILY—(CONTINUED).

23. *Triticum V. Wheat—Winter Wheat—Spring Wheat.—French, Le Froment—German, Gemeinest Waizen—Spanish, Trigo.*

The native country of wheat is undoubtedly Persia. Its adaptation to a large portion of the temperate zones of the earth, shows the great ageney it performs to the industrial world. We have already stated that rice nourished more human beings than any other grain, yet wheat is perhaps intrinsically the next valuable of all the Cerealia, or grain-bearing grasses. It is the staff of life to civilized man in the temperate latitudes, and as an article of commercial interchange, holds the first rank in the great corn markets of the world. This plant has been so long under culture, that numerous varieties adapted to all the different latitudes in which it is successfully grown, have been originated, and have in turn been favorites and again been discarded for new fanciers. The best variety for the South is one which ripens early, and escapes the ravages of *rust*. The Hessian fly, once a great scourge to wheat-growers, has, in a great measure, been subdued, by *late seeding* with early varieties; stimulated to rapid growth by generous manuring with cotton-seed or guano. McCullock, in his Commercial Dictionary, says, that the finest samples of wheat are small in the berry, thin-skinned, fresh, plump and bright, readily slipping through the fingers.

One species, *Triticum Turgidum*, is cultivated in Italy, solely for the manufacture of leghorn or straw hats. A good substitute for this would be the numerous culms of the wire-grass of the lower counties of Georgia and Florida.

The *smut* may readily be banished by steeping the seed-wheat for 12 hours in a solution of *blue vitriol*, at the rate of one pound of vitriol to every four bushels of wheat. The late John S. Carwile, an honored citizen of Newberry District, South Carolina, first promulgated this important discovery, and has proved a benefactor to the world at large, in a greater degree than can be estimated. His practice has since crept into the systems of chemists, and it is as well that the proper credit may be put on record, so that his good name may not be robbed of so great a benefaction to mankind. My authorities are Hon. F. B. Higgins, Chief Justice O'Neall, Associate Justice Johnston, the late Capt. John Summer, the late Capt. Jacob Duckett, and Col. Simeon Fair, of Newberry, S. C., all of whom could fix the discovery and its date on Mr. Carwile.

24. *Tritieum Repens*—Couch Grass—Quitch Grass.—This is a native of Europe, perennial, but extensively introduced into the pastures of the Northern and Middle States. It is as troublesome a plant in cultivation there as Bermuda grass is in the South, and from its creeping roots is as indestructible. It would furnish an excellent substitute in our mountain valleys for Bermuda grass, for permanent pastures, especially where it is too cold for the cotton to grow, as it flourishes on indifferent soil; but, perhaps, even in such regions it would be better to avoid its introduction, as more valuable grasses, with a little care, might be made to succeed.

25. *Secale Cereale—Common Rye—French, Le Seigle—German, Gemeinar Roggen—Spanish, Centeno.*

Rye succeeds well on light sandy soils, affording more grain, and of a better quality, than if grown on richer and more alluvial soils. It is the great bread-corn of the northern parts of Europe, furnishing food to all of northern Germany, Denmark, Sweden, Norway and Prussia. It succeeds well on thin, dry soils, artificially improved. We have seen superb crops grown in Marion County, Florida, on dry sand-hill lands prepared by cow-pening a few weeks, and sown in December. The whole sand-hill region of South Carolina and Georgia could, by the aid of sheep and the common cow-pen, be converted into the finest rye fields in the world. In the course of time those soils will be the best and safest cotton lands of the South. This will be effected by sheep husbandry—sowing the land in rye to be fed off, or subverted and followed by turnip and potato crops and cow-peas, turning in the peas, and so on, improving it by successive double cropping. Ergot, which affects rye in cold damp situations, is never seen in the South, where it has genial warmth and bright suns to mature it.

26. *Elymus Virginieus*—Lime Grass—Wild Rye—This is a very common perennial native variety, found on the alluvial banks of streams and ditches, flourishing freely amongst weeds and briars, and making a show of luxuriant herbage at the latter end of winter and early in spring. It is really the only valuable indigenous winter grass which we have, and doubtless, with proper cultivation, might be made to answer a good shift for winter pasturage in the months in which it flourishes. It ripens its seed, and disappears with the heats of summer. It bears the same relation to rye, which *Couch*

grass does to wheat, and hence we classify it in this connection.

27. *Hordeum Vulgare—Four Rowed Barley—French, Orge Commune—German, Gemeine Gerste—Spanish, Cebada.*

28. *Hordeum Distichum—Two Rowed Barley.*—Barley, alike a native of Sicily and Tartary, grows well on rich soil, from the tropics to the utmost limits of the temperate zones. It is seldom used as corn for bread in the United States, but is exclusively grown for brewing purposes and for soiling and grazing, in the South. *H. Vulgare* is the most productive variety, although *H. Distichum* is preferred by the Northern farmers, for economical reasons, as it is later in maturing. In the North it is exclusively sown in the spring; in the South it should be sown from September to February, in successive crops, so that for soiling each sowing should suceeed the preceding. Its green forage is the best early soiling we can obtain in the South, and if the land is artificially rich, it may be mown off, and it will spring up again and make a later mowing or a tolerable fair crop of grain. Barley should be sown on dry, artificially manured land, for soiling or grazing, at the rate of two-and-a-half bushels per acre—for grain one-and-a-half bushels per acre is a sufficient quantity. If grazed moderately in winter by sheep, calves, colts, and such light stock, the product is in no wise injured, if they are taken off before it commences to culminate.—For the farmer and planter it is a most valuable grain, and its successful cultivation, indicative of good improved agriculture, should, for this requirement alone, induce every one proud of improving the soil to make a show of barley in his fields.

29. *Hordeum Nuda.*—A newly introduced beardless and skinless variety, of which not much is known. Cultivated by Mr. M. Werts, of Newberry, S. C., from whom we should be glad to hear on the subject.

30. *Avena Sativa—Common Oats—French, Avoine Caltivu—German, Gemeinei Hafer—Spanish, Avena.*—The native locality of the oat plant is not definitely settled, though it is asserted that it was formed originally on the island of Juan Fernandez. If this is true, it is the only small grain cereal furnished by the Western Continent to the wants of man and beast, always bearing in mind that the grandest cereal ever presented to the care of man is the Indian corn, a native of South America.—Oats in variety, white, black, and yellow, of winter and spring varieties, are cultivated in all parts of the country, as food for horses. Dr. Johnson, in compiling his Dictionary, defines oats "*to be the food of horses in England, and of men in Scotland*"—one of his many instances of national prejudice and illiberality, as if the effects of climate were a fit subject on which to taunt a people. The winter varieties of oats will, like barley, bear early grazing. For this purpose the Egyptian and large black oats are the best. They must be sown on rich dry soil, as early as October, in order to be productive of heavy crops. A variety of the oat *Avena Nuda, skinless* oats, is a delicate sort, well suited for making oat-meal as an article of diet for the sick. The oat crop has of late years been affected by rust—we know no remedy but early sowing.

31. *Arrahenathermu Avenaceum—Oat Grass—Grass of the Andes* (South American Pasture Grass of Dr. Cloud)—*Stanford's Wild Oat Grass, &c.—French, Avoine Elevee—German, Wiesen Hafer.* This valuable grass is a *native* of Europe, and is a perennial. Flint says of it in his "Treatise on Grasses," "It is esteemed *for its early, rapid and late growth*, making it well calculated for a late pasture grass." It withstands the winter in all parts of the South, flourishes well on sandy soils—moist, but not springey, and yields a large amount of grazing or forage when mowed off. We have seen it cultivated for years by our friends Col. David Johnson, of Union District, S. C., Joseph Caldwell and Dr. W. W. McMorris, of Newberry. Dr. Cloud obscured its true name by publishing it as South American Evergreen Pasture Grass, and a Georgian, named J. R. Stanford, eclipsed and ignored all previous names, by calling it "Stanford's Wild Oat Grass," or some such name, in order to enable him to sell the seed at *twenty dollars a bushel.*—Gentlemen acquainted with English agriculture know it as Oat Grass, whilst botanists all readily know it by its technical name, as above written.—The various names bestowed on this grass, in a few years past, attest its value, as well as a necessity for correct nomenclature, and a general understanding of agricultural botany.

Note.—The author of this series, residing at such a distance from the publisher's office, as to preclude the possibility of his reading the proof in time for publication, must account for the frequent errors which the printer has made in botanical terms.

Rape-Seed Oil has been introduced in considerable quantities into San Francisco from Japan, and several of the California papers asks: "Cannot this oil be manufactnred at home?" It can, and is a very excellent oil for burning in what are called the "French mechanical lamps."

Cream Cake.—One cup cream; 1 do. sugar; 2 cups flour; 1 egg; 1 teaspoon soda.

INFLUENCE OF DIFFERENT KINDS OF MANURE ON HERBAGE.

The grasses form a most important tribe of farm plants. Nutritious in their bulky green state, and highly conducive to the health of the stock which browse upon them in our pasture fields, they are no less valuable when dried into hay. The natural history of the grasses has long since been written; they are what belong to one great family of plants —the graminaceous—and possess certain characteristic properties, by which we readily recognize them. The chemical and other properties of the grasses differ very considerably. One contains more albuminous compounds; another, more mineral ingredients; one is most nutritive at the period of flowering; another contains most nutritive matters when fully matured. It is, however, singular that we are not in possession of reliable data whereby to pronounce an opinion as to the relative merits of the grasses. Science has thrown some light upon this subject; it is but that dim glimmer which prevents our seeing the entire distance before us.—There is a dark place which must be illumined, and an ignorance which must be corrected, ere the farmer and the grazier can truly balance the merits and demerits of particular grasses, for particular purposes. Chemical analysis alone will not accomplish all that we require, any more than the empiric conjecture of the more practical man; the two must co-operate, and naturally correct and assist each other.

The grasses, like other plants, are amenable to those various physical agencies which influence vegetable life. Heat, air, and light, exercise their own distinctive functions in modifying the size, etc., of plants. That there is a most intimate connection, too, between the soil and the character of the vegetation which it naturally bears, is well known. It is also a well known fact, that the manures with which we top-dress grass lands very considerably influence the character of the sward, diminishing the proportion of one species of grass, and increasing that of another. The laws by which these modifications were effected, remained unknown, however, until Messrs. Lawes and Gilbert undertook to investigate the subject. In experiments instituted to test the effects of different manures, in simply increasing the valuable yield of grass, they were so struck with the marked effects of some of the manures in destroying certain plants and families of plants, that they sought the assistance of the late Prof. Henfrey, in classifying the plants composing the sward. The plots selected for botanical examination were:

1. Not manured.
2. Manured with ammoniacal salts alone.
3. Manured with mixed mineral manures alone.
4. Manured with do. and ammoniacal salts.
5. Manured with do. and double quantity of do.
6. Manured with farm-yard manure.
7. Manured with do. and ammoniacal salts.

The herbage was classified chiefly into (*a*) graminaceous plants, (*b*) leguminous plants, and (*c*) miscellaneous herbage, principally weeds.

The graminaceous plants formed, at the time of cutting, 75 per cent. of the produce of the unmanured portion; on the part manured with farm-yard manure, they found 87¾ per cent.; 79¾ per cent. when farm-yard manure and ammoniacal salts were used; 72 per cent. on the portion to which mineral manures were applied; 80 per cent. where forty pounds of ammoniacal salts alone were used; 79⅓ per cent. by the same amount of ammoniacal salts and mineral manure; and 97¼ per cent. where the double allowance of both ammonical salts and mineral manures were applied. The quality of the graminaceous herbage varies, no less than the proportion of it which composed the herbage under the different manures.

At one time, the graminaceous portion of the herbage consisted of 66 per cent. of flowering or seeding stem, and 34 per cent. of leaf and undeveloped stem, on the unmanured plot; 59 per cent. of flowering and seeding stem by mineral manure alone; 40 per cent. of the same by ammoniacal salts only; 75 per cent. by the joint application of animal and mineral manures; 67 per cent. by double application of both manures; and 80 per cent. when farm-yard manure and ammoniacal salts were applied.

It has been found that the manures which increase the amount of whole produce, also increase, in a very high degree, the proportion of graminaceous herbage, a conclusion which is no of less interest than importance. The foregoing facts also lead to another instructive conclusion, namely, that nitrogenous manures have a special effect in developing the "proportion of leaves and shoots," while mineral manures tend to the increase of the flowering and seeding of the plants; a conclusion of great practical value to the farmer, as it teaches that guano and sulphate of ammonia produce very different results from those mineral manures which depend for their efficacy on their containing the ash constituents of plants.—*Irish Agricultural Review.*

LETTERS TO YOUNG FARMERS.

Young Men of the Farm:—We would speak in this letter of your occupation. It is an important matter with a young man to decide upon an occupation. Very early the question comes to every young man of energy and character, "What shall I do?" To answer this question well, is to start well in a career; is to insure success; is to determine what one is and can best accomplish. Few young men can do anything or everything that may offer, equally well. We all have our peculiarities of talent and taste—our special gifts. These qualify us for special callings. Some men are born to be mechanics; others to be artists; others to be teachers; others to be orators; others traders; others farmers.—Each will do best in the sphere to which he is best adapted in mental and physical organization. A man born to be a farmer would not make a good artist; nor would one born to be a teacher or mechanic, be likely to make a good farmer. But every man is made for something; he has a place to work; he fills up a niche in the great temple of humanity. To find this place and work well in it, is to win a victory in life. The first thing with young men is to find this place. And a most important thing it is. Many a man is utterly spoiled by being

put out of his place. Many a good farmer is spoiled by trying to do something else. Let every young man understand that he is made for something.—There is a place for him somewhere. He must not be a do-little, a drone, a leach on society; he must be a man in his place; do a man's work, occupy a man's position, and secure a man's respect. This can be done easily if he gets into the right place.—A man's occupation is the harness in which he works. If he has on the right harness he will not chafe and fret. He will seem to have on no harness at all. He will feel himself free—at home—in his natural element. But if he wears a harness made for another, it will gall him, worry him, annoy him continually, unless he has an unusually good disposition.

But how is it with young farmers? Is there not a proneness to imagine themselves made for some other occupation than that to which they are reared? Are they not wont to fancy they were made for merchants, artists, lawyers, doctors, polititians, or something else than that which they already know well how to do? How many young farmers are longing to get into the city, as though cities were Edens for humanity. How many learn to hate their country homes, and crave the pestiferous life of a city; to hate their legitimate occupation, and crave some dandy's place behind the counter or desk.—Foolish young men! Every city is a hot-house of wretchedness and toil. It is a rotten fungus on the body of humanity. It is full of disease and pain. To live in one and not be corrupted, is to run the gauntlet of one's life. To engage in its occupations is to risk one's highest happiness and good. Every city is crowded to suffocation with anxious and ambitious young men. When the whole country is yearning for their toil and talent, they huddle together in cities to breed corruption and ruin.—Many young men mistake their talents through a vain desire to shine in the gaudy pageant of a city. They often fancy their hands are too soft for hardy labor on the farm, when the real fact is, their heads are too soft to understand their best good. Soft hands and soft heads generally go together. It is the bane of our age that men crave so much the sickly shams and shows of city life. Far healthier, far happier, far more useful is a well-spent country life. Let the young men of the country cease this insane craving for city life and vocations. Let them cling to their farms and try their tastes and talents on them. By far the greater number of young men are best fitted for farmers; especially so, now that farming is taking on so many characters. The stock farm, the grain farm, the fruit farm, the vineyard, the garden, the nursery, the landscape garden, agricultural architecture and ornament—all these afford special fields for taste and talent. Nowhere are there richer fields for young minds and hands to enter, than in the teeming departments of agriculture. The mechanic and artist by nature, can find employment here. The best talent of any country or age can be nobly employed in any branch of the agricultural interest.—Let the young men of the farm consider well their course before they decide to leave the farm for any other vocation.

From the American Agriculturist.

HORSES NEED AIR AND LIGHT.

If anything can be done to add to the comfort and health of the horse, no animal deserves more to have such an effort made. Our stables should be constructed with special reference to his comfort and health, and to these all other accessories must yield.

Our fathers' and grandfathers' barns were of the wide, old-fashioned sort, with all manner of loop-holes and air-holes. Between the vertical boarding you could put your whole hand. They were originally tight, but when well seasoned, there was light without windows, and the pure air circulated freely. Here was perfect ventilation, and yet talk with those same men about the necessity of ventilating a stable, and they are ready to prove that they have kept horses all their lives, who did well, worked well, were always in fine health and spirits, and that a ventilator is only a fancy idea—one of the new-fangled notions of the present generation.

Our stables have been improved in architectural beauty, and in more permanent form of construction—they are pleasing to the eye, tight, proof against the wind and weather, and with solid walls of brick and stone—all of which the poor horse would gladly exchange for the pure, fresh air, of which he is now deprived.

In providing for the necessities of a horse, it would be well to ask ourselves, how we should like to be placed in the same situation. If it is healthy for a man to live day and night in a close, damp cellar or underground apartment, then it is healthy for a horse. If it is healthy for a man to live on the lower floor, in an unventilated apartment, with a manure and root cellar beneath him, whose pestiferous miasmas are penetrating every crack, mingling with the foul air he breathes, and, rising still higher, permeating the food he consumes—then it is healthy for a horse. But why argue against barn-cellars and ill-ventilated apartments? The proof is abundant to all who want it, and he that cannot be convinced must cease to wonder why his horses have diseases of the skin, the lungs, the eye, etc., or the glanders, the grease, the scratches, and other diseases that are directly traceable to the impure atmosphere in which he compels them to stand and breathe.

We would, therefore, in the construction of a stable, endeavor to provide against these evils. Build root cellars and other cellars entirely distinct from the barn—at least not directly under the horse stalls; let there be a free circulation of air under the floor, and particularly so throughout the stable apartments. Ventilate the horse stable through the roof, and entirely independent of the other portions of the barn; let the connection between the horse stable and the hay mow be closed tight, except when hay is being delivered. Ventilate the carriage house through the hay mow and roof.

Let your horses' heads be towards the side or end of the barn, and provide the head of each stall with a fair-sized window. A horse wants, under all circumstances, whether tired, sick or well, plenty of light. When there is light and plenty of fresh air, it is a common practice to turn the stalls the other

way, and keep the horse somewhat in the dark.—A good horseman knows that a horse enjoys light and air as much as he does himself, and he will thrive better in the coldest winter on the lee side of a hay-stack, than he will in a badly ventilated barn, however comfortable it may be otherwise. It is stated that, if the gases exhaled from a horse's body were confined around him by a gas-light bag, they would cause his death in twenty-four hours, allowing him at the same time to have his head out and to breathe the pure air.

If you want satin-skinned horses, in fine health and spirits, ready at all times to work or to drive, a thorough system of ventilation will be one very important step towards it.

A manure shed should be built outside the stable, and sufficient only to afford protection from the wind and rain, with a door connecting with the barn, and running to the floor of the stable, which should only be open when the stable is being cleaned. The exhalations of the manure heap are then not permitted to return to the stable—nor should any of the gases generated in the stable be allowed to pass into the carriage-room or hay mow.

As a matter of economy, it is just as cheap to build a stable calculated to give a horse the greatest amount of comfort, as to build it in any other way. Cellars are handy arrangements, and in the first cost it may be cheaper to put them under the barn, but a few years' experience will show the heaviest balance on the debit side.

N. Y., 1860. G. E. W.

From the Cultivator.

WHAT TIME SHALL WE CUT TIMBER?

Never in winter, but always in summer. It should be cut during the most rapid season of growth, and while that season is drawing towards a close. The same rule should be followed that skillful nurserymen observe in performing the operation of budding—that is, just as the *terminal bud* on each branch *begins* to form—as soon as it is first evident that the growth of the branch is about to terminate, but is *still in active progress.* Experienced tree-propators have found that much earlier than this, the juices of the tree are in too thin or liquid a state to form a good adhesion between the bud and the peeled surface. From the moment that the bark separates freely from the wood, these juices continue to thicken, until growth ceases altogether, and the new wood is completely formed; and when this new wood is in the state of a thick paste or cement, then is the time that the bud will adhere most perfectly. This is the period when the bark may be peeled from a tree without destroying its vitality. And this is the time for cutting timber. Early in spring, the tree is full of sap, which is little else than pure water, and which has been gradually accumulating through winter by the absorption of the roots, with no outlet for its escape, as there is in summer through myriads of leaves. While the tree is thus replete with water, it is in the worst condition to be cut. But towards midsummer, when a portion of this water has passed off through the leaves, and the rest has been much thickened by conversion into material for wood, the case is very different; for while the watery sap promotes only decay, the thickened juices soon dry and harden, and assist in the preservation of the wood.

We have recently been furnished with a number of facts, in corroboration of this opinion, by Isaac Hathaway, of Farmington, Ontario county, N. Y., an old and enterprising settler, a close and extensive observer, and who has had much experience in connection with saw-mills and timber erections.—All his observations tend to show the great difference between winter and summer-cut timber, and induce him to think that, cut at the best period, it will last under the average of circumstances, three times as long as when felled in winter. In one instance, a fence, consisting of winter-cut materials, a part split into rails, and a portion in round poles, of beech, maple, iron-wood, bass-wood, &c., had completely decayed in fifteen years, and none of it was even fit for fire-wood. In another case, a quantity of bass-wood rails were cut in summer, and split from the brown or heart portion of the tree. This was done about fifty years ago; thirty years afterwards the fence was quite sound, and even now some of the same rails remain undecayed, although much worn away by the weather. Winter saw-logs, left over one summer at the mill, are usually much decayed for several inches towards the interior; summer-cut logs, which have lain a like period, are always sound. He has cut hickory for axe-helves; if done in winter, decay soon commences, and the worm which loves this wood, often wholly destroys its value. Summer-cut, he has never known it to be attacked by the insect, and indeed it seems too hard for them to penetrate. He has had occasion to examine several old frames of buildings, and in every instance, where the period of cutting could be determined, the same striking difference in durability was conspicuous.

He related several experiments on the durability of posts, one of which is worthy of repetition. In a gravelly soil, where the water never remains, a stone bottom a few inches thick was laid in the post-hole, on which the post was set, and was then surrounded with stone closely rammed in on every side. As a consequence, the water never remains long enough in contact with the post to soak its interior, as would be the case if damp earth passed its outer surface. Such posts consequently give promise of remaining sound, after some years trial, at least twice the period of those simply packed in earth. He also finds that posts of what is termed the white cedar in western New York, (the American arbor-vitæ) last much longer when set green with the bark on, than if sawed and seasoned, which he attributes to the protection afforded by the durable bark against the vicissitudes of rain and drouth, and the air and weather generally.*

Now that the season is approaching, best adapted for timber-cutting, as indicated in the preceding remarks, we hope those interested will at least satisfy themselves on the subject by a fair and careful trial.

* In ordinary instances, however, above ground, the bark, by preventing seasoning, only accelerates decay.

WHEAT AFTER CORN—THE PRESENT WHEAT CROP.

The prevailing custom of the farmers of the West and Southwest is to sow wheat upon the same land immediately after a crop of corn. Formerly, when there was no market for wheat, the seed was sown among the standing corn and covered with the small plow or harrow; but since the establishment of railroads a market has been opened for Western wheat, at a price per bushel but a few cents below that obtained at the principal sea-ports. This fact has led our farmers to give more attention to the preparation of the ground for wheat, by first cutting up the corn and plowing the field entire before sowing down to wheat. This can hardly be regarded as a rotation, because the wheat is usually followed by another of grain, which is severe cropping, such as no land can long sustain. No ameliorating crop intervenes, and no rest is afforded the overtaxed soil. It is a mere change, or succession of exhausting crops.

A degree or two north of us corn hardly matures in time to admit of seeding the same land to wheat, and hence wheat is more generally sown after clover upon summer fallow. This is a better course for several reasons. The soil is not only renovated and improved by the crop of clover, but it affords the farmer ample time to give the land a thorough preparation, and to sow his seed at as early a period in the fall as he may wish. Upon timely sowing sometimes depends the success of the entire crop. In ordinary seasons with us, corn may be planted so as to mature in time to sow wheat sufficiently early. But if the season be a wet one, with the cultivation corn usually receives, there is a great amount of weeds and grass that it is difficult to plow under so as to afford a suitable preparation for the young wheat. And if the season be dry and backward, the corn does not mature in time to be removed for the successful sowing of wheat. The experience of the past fall affords ample proof of this fact. There is now a very general complaint of the destruction by frost of the late-sown wheat, throughout Kentucky, Tennessee, Missouri and Illinois, and some sections of the neighboring States. Corn was checked in its early growth by the summer drought, and matured too late to admit of clearing off before the most favorable season of wheat-sowing was past. The crop making but a feeble start in the fall, and then being overtaken by the severe frost of December, and the early part of January, while the soil was perfectly saturated with recent rains, led to the entire killing out of thousands of acres, much of which the farmers have plowed up and sowed with spring wheat, where seed could be obtained, or with other grain; and much that was suffered to remain will hardly yield half a crop, while more will not return the seed.

We have traveled extensively during the past winter and spring, and have observed in many instances the most striking contrast, even between adjoining fields, where wheat was sown upon a clover fallow, and where it was sown upon land after corn. The one hardly ever looked more promising, while the latter, in many instances, is entirely killed out. These facts afford important lessons, that should not be lost, upon the farming interest of the country. Wheat immediately after corn is severe cropping, even did it admit of the necessary preparation of the soil. Besides the time afforded for a thorough preparation by summer fallow, a clover crop may be rendered valuable for hay and pasturage, in addition to the restoration of fertility afforded to the soil by the large quantity of roots and tops of the clover, when turned under. Aside from the disastrous consequences of such a season as the past, clover or some similar crop, as a renovator, should always come in as often as once in four years, upon land that has been thoroughly subdued and brought into cultivation.

Another serious objection to sowing corn after wheat, as practiced by our farmers, is the injury the crop of wheat sustains from the team and wagon in hauling off the fodder. The stalks are usually removed daily, as the stock needs feeding. This is done without regard to the weather, or the state of the ground, which, for a large portion of the winter, is wet and unfrozen and liable to be badly cut up. A very considerable per centage of the wheat crop is lost in this way. It would be a matter of economy to remove the entire corn crop, when practicable, before sowing the wheat, or to remove it only when the ground is frozen in the winter.

Wheat, at best, is a critical crop, and of all others requires the most thorough and careful preparation of the soil. If the same care was bestowed in this respect by our farmers that is practiced by those of England, or of the Genessee Valley, the crop might be increased more than fifty per cent. on the same land.

From the Cultivator.

GYPSUM AND AMMONIA.

Messrs. Editors:—As the time of making compost is at hand, and the use of gypsum as one of their ingredients, has lately been decried, I take the liberty of giving you the substance of the results of some experiments recently made, bearing upon that point.

It is well known to the most of farmers, that during the decay of animal and vegetable matter, a quantity of *ammonia* is found, which, from its volatile nature, is very liable to evaporate, or pass away in the atmosphere, very much to the deterioration of the value of the substance as a fertilizer, for ammonia is a very beneficial manure. The form in which it flies away, is generally that of *carbonate of ammonia*, a very volatile pungent salt known under the name of hartshorn. Various means have been suggested and used to fix this, that is, to render it less volatile, and keep it in the material in which it is formed for the purpose of using its valuable compounds as fertilizers. A common way has been to mix gypsum (sulphate of lime) with the material used in compost heaps, when a mutual decomposition takes place, in which carbonate of lime and sulphate of ammonia was formed. This last salt is much less volatile than the other compound of ammonia mentioned, and is therefore more easily retained in the heap. It has recently been denied, in a scientific journal, that this change does take place—that dry or nearly dry carbonate of ammonia will

decompose and be decomposed by gypsum, and therefore that it would not fix the ammonia, and that its addition to other manure, added to its value, only by its own ingredients—not by saving other valuable products. This statement has been copied in several popular newspapers, and if incorrect, should be refuted, as it pretends to be based upon the unerring laws of chemistry.

I took three samples of gypsum, (the common, such as is used here by the farmers,) and treated them with carbonate of ammonia in different ways, imitating the condition of the compost heap. The first I moistened slightly, after mixing the two together, not making them more damp than they would be in a heap of compost.

The second I left *dry*, as they were mixed.

In the third, I did not allow the two to come in contact at all, but kept them separated, so that to unite, the carbonate of ammonia must come in contact with the gypsum as it evaporated.

In all three cases, I exposed them a few days to air mixed with carbonic acid (conditions always present in the compost heap) at the ordinary temperature of my room, and then exposed them to the pure air until the carbonate of ammonia had all been decomposed (or evaporated), and afterwards examined them chemically. *In all cases a mutual decomposition had taken place.* The gypsum (which was originally present in the largest quantity,) contained much carbonate of lime, and a corresponding (apparently so at least,) amount of sulphate of ammonia was present in the mixture, which I separated by chemical means, and examined.

As I have remarked, the gypsum was present in excess, and so it should be in the compost heap—that is, there should be more than enough present to decompose all of the ammoniacal compound.—Otherwise there will be some that will escape, and undoubtedly a small quantity always does escape, not coming in contact with anything which will retain it, for it is difficult to have such substances thoroughly mixed through the mass.

I think these experiments show that the use of plaster, or gypsum, for this purpose, is founded on sound principles, and consequently are safe to follow. Such experiments have been frequently made by others, and I intend, if possible, the coming summer, to carry on these further, and see if such changes do actually take place in fermenting and decaying barn-yard manure, the result of which you shall have, if you think them worth your attention.

Yours truly,

Wm. H. Brewer.

ACTION OF THE SOIL ON VEGETATION.

The late Prof. Gregory left the following summary of recent views relative to the action of soil on vegetation:

1. Way, and after him, Liebig, has shown that every soil absorbs ammonia, and also potash, from solutions containing them or their salts, generally leaving the acid, which takes up lime, &c., from the soil in solution. The ammonia and potash, which are absorbed in very large proportion by arable soils, are rendered thereby quite insoluble.

2. Arable soils asorb also silicic acid in very considerable proportion, and it also becomes insoluble.

3. Arable soils also absorb the phosphoric acid of phosphate of lime, or of ammoniaco-magnesian phosphate, apparently soluting the acid, which also becomes insoluble.

4. Hence the soluble ingredients of manures cannot be conveyed to the plants in the form of a solution percolating the soil, (such as liquid manure, or a solution formed by rain-water with the acid of carbonic acid,) since such a solution is deprived of its dissolved ingredients by filtering through a very moderate amount of soil.

5. Hence, also, as the food of plants must thus be fixed in the soil in an insoluble form, it is plain that it can only enter the plant in virtue of some power or agency in the roots, which decomposes the insoluble compounds in the soil, and thus renders soluble the necessary matter.

6. The absorbent power of soils is partly chemical and partly mechanical, as is the case with charcoal.

7. The quantities of alkalies, of phosphates of ammonia, &c., capable of being supplied to plants by rain-water, after it has been percolated through the soil, even supposing the whole to be assimilated, does not amount to more than a mere fraction of what the plants contain.

8. The theory of the transference of ammonia, potash, silica, phosphates, &c., from the soil to the plant, is not yet understood; but the old theory, that the rain conveys the food to the plant directly, is certainly not the true one.—*Edin. New Phil. Journal.*

From the Southern Planter, from Nottoway Club.

RECIPROCAL RELATIONS BETWEEN FARMERS AND MILLERS.

Mr. President:—In discharge of my annual obligation, I propose to discuss a subject of much more importance than is usually attached to it. I refer to the reciprocal relations of farmers and millers.—Owning three mills myself, I can take the liberty of expressing the opinion that there is not a more fruitful source of imposition and injustice to each party, as such operations are usually conducted. I claim no exemption for my own, but if any imposition be practised, I desire to furnish the means of detection. Injustice is frequently visited on the miller by the usual practice of selecting a mill-boy without any regard to his honesty or carefulness.—I have known turns to leave the mill with the boast of the miller, for favorable turn out, but so depleted by depredation before reaching the owner, as to excite complaint. Such occurrences indicate the necessity and propriety of some uniform standard of management, precluding such results. The plan I recommend is, for the farmer first to secure what is termed a sealed half bushel measure, with iron strips across the top, to prevent abrasions from the friction of measurement, or variation from the convexity or concavity of the striker; that the owner should, for one time at least, attend to the measurement of the corn (even measure), that he accompany it to the mill, and see in person to the tolling and grinding—that he shall measure the product at the hopper, and again at home, the quantity being slightly lessened by the agitation and compression

of the removal; that he shall then measure out for each person on his farm, the requisite quantity for a day or week, and ascertain thus exactly how much corn will make the requisite quantity. This being once done, will answer for life, and tend to preserve the satisfactory, mutual intercourse of the parties, as well as check any proclivity to dishonesty on the part of the miller or mill-boy. For the benefit of those who may not find it suitable or convenient to superintend the process, I will present some results in a measure superceding such necessity. A bushel measure is generally considered to contain but 8 gallons, but it will be found generally to contain near 10 gallons, and properly ground will yield 13 gallons of meal at the hopper. I regard it as not an unreasonable calculation on the part of the farmer, that after paying $\frac{1}{8}$ for toll, he should receive back in bulk $\frac{1}{8}$ accession in meal. If properly ground the bulk is not reduced by the process of sifting, as it lies lighter after that operation. The calculation should always be made by an even measure, as the heaping may be irregular. Perhaps the safer plan would be to weigh all, though there is a necessary reduction in weight from evaporation, wastage, &c. Where there is regularity in the quantity sent and ground, and at regular intervals, the miller can tell when it is received, whether there is any material diminution, and can refuse to receive it, reporting the fact, and the person sent to mill can do the same, and when it is understood that such particularity is mutually observed, no difficulty is likely to arise.

This regularity also ensures a constant supply, otherwise some suffering will result from sudden exhaustion. I am persuaded that a regard for these regulations is essential to a proper and friendly understanding and intercourse with all concerned, and that no person can properly and safely complain without them. I am farther persuaded that no person, in the usual negligent arrangements of the country, loses less than the amount of his annual taxes, or will save less by a proper observance of these necessary precautions. This discussion might be advantageously extended as to the proper system of management in providing and distributing supplies for servants either by the day or week, and on which I would be gratified by the views of others, preparatory to a decision, and most judicious selection. E. G. Booth.

May 10th, 1860.

From the Working Farmer.

CHARCOAL AS A FERTILIZER.

Although charcoal is frequently recommended as a fertilizer, still we freely assert that it has no fertilizing property of its own. That is, it never enters a plant as part of its structure, nor will it be changed during any ordinary space of time in the soil, into food for plants; its value, however, in the soil, is none the less to the agriculturist, for it performs functions that cannot be performed to the same extent by any other ingredient.

Charcoal has strange powers in absorbing odors, gases, etc. The brown liquor of the barn-yard, when filtered through charcoal, gives a pure water only; all the fecal matter held in the solution is absorbed by the charcoal, therefore, it is one of the best dividers for manures, for it not only prevents the escape of ammonia and other gases, but retains these substances even against the solvent power of water, until assisted by the presence of plant-life.—M. Theodore DeSaussure has proved that, assuming 1 to represent a single volume of charcoal, it would absorb of ammoniacal gas 90, chlorine gas 85, carbonic acid gas 35, oxygen 9.25, hydrogen 1.75, and sulphuretted hydrogen 0.55. Indeed, so strong is its power to absorb odors, that when in contact with valerium galbanum, balsam of Peru, or musk, it destroys their peculiar odor. This absorbent power is generally believed to depend upon the great porosity of charcoal. Chemistry, however, is at fault in its attempts to define this fact. Charcoal in the soil is an ever attendant chemist, always receiving from the falling dews and rains all the organic wastes of decaying nature, and retaining these wastes until they can be abstracted by plant-life.—Many of the proximates in solution are received and retained in an unaltered shape by charcoal, until used by the roots of plants. In subsoiled lands, where the circulation of atmosphere is continuous, and particularly in those which are under-drained, charcoal is ever active in gathering together the wastes of nature. During the decay of winter or spring, all the result consequent upon the solution of roots is retained by the carbon of the soil, until the new growth can abstract it.

In mountainous districts, where charcoal is manufactured, the old charcoal hearths, sometimes called the coalings, are the first places in the spring where the animals can get a green bite. It is true that in a mass of charcoal, plants refuse to grow, but around the edges of these coalings the grass is soonest green and grows most freely. The sparks thrown from the spark-catcher of the locomotives at the railroad depots, throughout the country, are of great value, and should be used by farmers for top-dressings, both of their soil and their manure heaps.

Charcoal, perhaps, should find its way to the field through the stable, for there it will absorb and retain the urine of animals in the most miraculous manner. All the excretory gases given off from the bodies of animals are readily absorbed by it, and indeed its value is too great ever to permit it to be wasted.

What is it that constitutes the difference between loam which is fertile, and an unfertile soil? Generally, we find that old gardens contain large amounts of carbon (charcoal) in so fine a state of division as not to be discoverable to the naked eye, for every root and plant that decays in the soil, furnishes charcoal in this finely divided state. Indeed, the dark color of the garden soil, as compared with that of the adjoining field, is entirely due to the amount of carbon arising from the decomposition of manures, plants, etc. The carbon and alumina of the soil, are the chief ingredients which prevent the downward filtration of water from carrying fecal matter into the wells and springs; for had not nature supplied the surface-soil with these two ingredients, there would not be a well on earth whose water would be drinkable. Without the carbon or alumina in the surface-soil, all the inorganic constituents held in solution, would have passed toward

the earth's centre by filtration, leaving its surface barren. That which is true in nature's laws, may be taken, in degree, as a rule for producing a higher condition to the soil for special purposes; and where the surface is imbued with large additions of charcoal braize or its equivalent, gardening is rendered comparatively easy.

ASHES.

"Would you advise the mixing of unleached wood-ashes with barn yard manure?" says one, "With Peruvian guano?" says another, "With Nitrogenized Phosphates?" says a third. We answer to all, "No." Unleached wood-ashes have a much higher value as a manure than is usually accredited to them, and they should never be mixed with top-dressing manures, as they force out the ammoniacal portions while decomposing the organic portions. Wood-ashes unleached are worth in many districts, as a manure, fifty cents per bushel, when they are sold to soap-boilers at twenty-five cents.—These farmers, if they would treat themselves as they are treating their soils, would be bled once a day instead of repudiating the Sangrado. Unleached wood-ashes contain large amounts of potash, and exactly in that condition most available to a majority of crops. When mixed with swamp-muck, river-mud, woods-earth, chip-manure, head-lands, weeds, etc., wood-ashes assist materially in their disintegration, and in the development of their inorganic constituents to a condition capable of feeding crops, but when mixed with stable manures the decomposition is too rapid to permit the absorption of the ammonia, by the less valuable portions.—When soils are deficient of potash—and we have yet to find the soil that is not—wood-ashes may be sown directly on the surface, and the potash contained in them will find its way into the soil by the action of dews and rains, and as it is not volatile, the surface of the soil is the proper place for its deposit. It is true that it may find its way to the soil through compost, composed of otherwise inert materials; thus, spent tan may be reduced by the potash to a fine powder, well suited, after such treatment, for composting with stable manure, which in turn, will be rendered in a better condition for the use of plants. Thus the potash performs the double service: first of forwarding the decomposition of inert matter, and secondly, of furnishing potash eventually to the soil; but it should never be brought in contact before its application to the soil, with manures of a highly putrescent character, nor with artificial manures containing ammonia in any form.

As a top-dressing for grape-vines, wood-ashes are very valuable.

The difference between leached and unleached wood-ashes is very great; for the soap-boiler not only abstracts all the caustic potash the ashes are capable of yielding by lixiviation, but he composts with it caustic lime, so as to render all the carbonates capable of rendering up their alkalies; and thus leached ashes contain no potash for the use of the farmer. Their chief value consists in a minute portion of phosphate of lime, much less than could be bought for one-fifth the money directly in the form of potash phosphate of lime.—*Working Farmer.*

THOROUGH CULTIVATION MOST PROFITABLE.

The following practical illustration of the value of the thorough tillage of a small farm, in opposition to the common practice of cultivating superficially a larger tract of land, is taken from the *Homestead*, and it is worthy of attentive consideration. It is an admirable instance of judicious calculation and management:

"The writer purchased a farm of sixty acres ten years ago. He immediately sold thirty acres of the less valuable portion, and with a part of the receipts from this sale, he underdrained and subsoiled twelve acres of that which he retained. The soil is a gravelly loam and dry; but he drained it, he says, to make it wet. and succeeded. The whole of the manure from the barn-yard went to enrich these twelve acres, and now the land is really good. The second year after he came into possession, his crops from these twelve acres were more than double the produce taken by his predecessor from an average of at least thirty acres annually devoted by him to cultivation, while the quality of his products was 25 per cent. better than they had ever been. Off one acre and a third, he took four tons and three-quarters of clover hay. Though the land was previously in good heart, having a chance of obtaining six cords of manure from a blacksmith-shop, he top-dressed the clover with that, and a barrel of plaster besides. He keeps in better condition as many cattle as his predecessor, and intends to break up three acres more next spring, underdraining and sub-soiling at the same time. The writer adds, with emphasis:

"'I believe in a little farm, well tilled; too much territory is the greatest evil farmers have to cope with. The truth is seen every day; let us mend the matter.'"

From the Country Gentleman.

CHEAP DRAINING.

Having noticed an article in the August number of the *Cultivator*, (1859,) on subsoiling and ditching plows, I had some ditching to do, but had no ditching plow, and being a small farmer, and not able to get all the new and improved tools, I resolved to try it with a common plow. I commenced by plowing three furrows (all from one way,) about ten inches wide. These were pulled out with a dung hook. I then went up one side and down the other with the plow, thereby loosening about six inches of the subsoil, which was then shoveled out. The plow was then passed up and down again, and the loose dirt shoveled out as before; then plowed again, keeping one horse in the ditch until it got so deep that the whipple-trees rubbed on the edge of the ditch so that the plow could not go to a sufficient depth. I then plowed with one horse, putting him in the ditch, using a short whipple-tree that would not rub on the sides of the ditch, thus plowing and shoveling out the loose dirt until I got the ditch from three feet to three-and-a-half deep. I then put in stones, putting a row on each side of the ditch, leaving an open passage in the middle from three to four inches, covering it over with larger ones. I then put in small stones until the ditch was nearly half full. I then put some straw on the

stones, and plowed the dirt in again with two horses, putting them both on one side of the ditch, and as near it as possible, so that the dirt would fall in on the straw—and when the straw was covered, I put one horse in the ditch, and as the earth was all thrown out on one side of the ditch, I passed the plow along in the ditch, thereby smoothing and settling the earth down when going one way, and filling in while going the other way, until the ditch was about full. I then turned a furrow on the ditch, from each side, thereby ridging it up higher than the ground around it by turning five or six furrows toward the ditch on each side.

I believe there are many farmers who think as I did, that none but experienced ditchers could dig a ditch. By doing it when the ground is neither too wet nor too dry, any common farm hands, with a common farm team, may ditch as easily as do common farm work. I have no doubt but that tile is better and more durable for underdrains than stones, but in my neighborhood stones are the plentiest and cheapest. I have known drains made with stones last twenty years. If the drain that I have made should get stopped up in twenty or thirty years, I have no doubt but that there will be stones enough to make another one.

A SMALL FARMER.

Glenville, N. Y.

HORSE-SHOEING.

The following, from the *American Veterinary Journal*, seems to us the most sensible of any article we have seen upon the subject of Horse-shoeing:

An iron shoe tacked on a horse's feet, is one of the unavoidable evils of domestication, yet when properly applied it is not so great an evil as some persons might suppose. One of the objects in applying the shoe, is to preserve the natural concavity of the sole of the foot. A horse in his natural state, and, indeed, up to the period of his first introduction within the precincts of the "smithey," has generally a concave sole; and wisely is it so ordained; were it otherwise, the animal would be unable to secure foot-hold; as it is, the inferior edge of the hoof—that is, the ground-surface—projecting beyond the sole, may be compared to the point of a cat's claw, or the nails of a man; they grasp, as it were, bodies with which they come in contact, and thus secure a point of resistance, which aids in advancing limb or body, over a smooth surface. Now, in order to preserve the natural mechanical functions of the horn and sole, the ground surface of the shoe must correspond to the ground-surface of the foot; that is to say, the ground surface of the shoe must be beveled, cup-fashion—its outer edge being prominent, takes the place of the hoof—its inner surface, being concave, corresponds to the natural concavity of the foot. It is the custom among some blacksmiths to reverse the above procedure, and place the concave surface next the foot; and often the ground surface appears to be more convex than concave. In justice, however, to that abused individual, the shoer, (who is not always at fault,) we remark that often he is not allowed to use his judgment, for, as some people believe, "anybody can *doctor* a horse," so an equal number have an idea that they know all about *shoeing* him, and men will often stand over the smith and direct him as to the form of shoe and manner of securing it to the foot.

Notwithstanding men's various opinions on the general art of shoeing horses, we think that all will sooner or later agree with us, that a beveled, or cup-shaped ground-surface is the best. We care not what may be the form of the foot, whether it is high or low heeled, contracted at the heels, lengthened or shortened at the toe, or having a concave or convex sole; it is all the same. The ground surface must always be *concave*. In every other part of the shoe, improvements and alterations are suggested, and, indeed, required, in consequence of the ever-varying form and action of the horse's foot under the state of health and disease; but on the interior surface of the foot we are presented with a pattern for the ground surface of a shoe which no man can ever improve on, and if we were to follow that pattern more closely, there would be fewer accidents in falling, and less lame horses.

One Brick Wrong.—Workmen were lately building a large brick tower, which was to be carried up very high. The architect and foreman both charged the masons to lay each brick with the greatest exactness, especially the first courses, which were to sustain all the rest. However, in laying a corner, by accident or carelessness, one brick was set a very little out of line. The work went on without its being noticed, but as each course of bricks was kept in line with those already laid, the tower was not exactly straight, and the higher they built the more insecure it became. One day, when the tower had been carried up about fifty feet, there was heard a tremendous crash. The building had fallen, burying the men in the ruins. All the previous work was lost, the material wasted, and worse still, valuable lives were sacrificed, and all from one brick laid wrong at the start.

The workman at fault in this matter little knew how much mischief he was making for the future. Do you ever think what ruin may come of one bad habit, one brick laid wrong, while you are now building a character for life? Remember, in youth the foundation is laid. See to it that all is kept straight.

A Real Retort.—Judge Brink was once obliged to "double" with an Irishman in a crowded hotel, when the following conversation ensued: "Pat, you would have remained a long time in the old country before you would have slept with a Judge, would you not? "Yes, your Honor," said Pat, "and I think your Honor would have been a long time in the old country before you'd been a Judge, too!"

Heaves in Horses.—The *Farmer and Gardner* gives the following as a cure for heaves in horses: "Take smart-weed, steep it in boiling water till the strength is all out; give one quart every day, mixed with bran or shorts, for eight or ten days. Give green or cut-up feed, wet with water, during the operation, and it will cure."

The Farmer and Planter.

COLUMBIA, S. C., AUGUST, 1860.

HINTS FOR THE MONTH.

We take it for granted that the crops have been "laid by," clean and in good order—the season has been fine for grass killing. Do not allow grass or weeds to go to seed in your cotton fields, and top your cotton before it is too late. We are satisfied from repeated experiments that topping, if done early, will pay oftener than it will not.

Topping corn is a much more expeditious way of saving rough food than pulling fodder. The fodder below the ear is nearly worthless for food, and topping we are satisfied does not injure the corn as much as stripping. It will give you more food and more manure. Mow all the grass you can find about the plantation—one cannot well have too much hay. Without an abundance of winter food you cannot make manure, and good hay will save corn.

Now is the season for farm improvements to be attended to—repair all your farm buildings that require it, as quickly as possible; select timber for durability, posts, boards, &c.; fix up your gin-house for winter use.

Put away your seed wheat (after being well sunned) in close boxes, sprinkling strong lime amongst it—½ bushel lime to 50 bushels wheat.—Don't throw away your wheat straw and chaff because old Fogy says "it aint got no strength in it"—it is good food for horse or cow, when taken care of.

Hygeine.—Have your quarter yards all swept off clean, everything raked out from under and about the houses, and hauled off to your turnip patch.—Whitewash the inside of the cabins, and sprinkle lime, solution of copperas or charcoal dust freely about the buildings. Remember, 1 oz. P.=1lb C.

Now is the time for bushing and sprouting—sprouts cut down in August do not come up so readily.—Clean up your branch margins, and give the grass a chance to make a nice winter bite for hungry animals—clean off meadows and mow down the weeds.

Turnips.—The first season sow turnips—don't believe in the moon, but put your trust in the seasons, the manure, and the work. Drilled turnips will pay best. Sow plenty of seed for the fly, and as soon as the rough leaves get large enough, thin out and cultivate. We will have to go back to our old seeds—nearly all the fine foreign varieties rot, from some cause, very early. Whether they are not adapted to our climate, or punctured by some insect, which make its appearance near about the same time, is a question; but that we have only been able to save seed from our old varieties for three years, is a fact.

Potatoes, Sweet—Pick out all the bunches of grass.

Irish Potatoes.—If you have been fortunate in seasons, and have a fall crop of this esculent, apply ashes and plaster, and mulch freely after a season, and you may have fine potatoes.

Field Peas.—If you have the Whippoorwill, Java or Shining, whatever its name is, gather seed now before your cotton begins to push you.

Farm Implements.—Have everything collected and put under shelter—repair broken and make new ones, grind and handle axes. See to your wagons and carts before you need them, and have the tires tightened, and other repairs done. Mend up harness, and make hampers and sacks to be ready for cotton picking.

Census Taker.—Get ready for him at once, if he has not been to see you, and give him an intelligible account of your operations, &c.

Stock.—Your hogs are now fat, if in the harvest fields and luxuriating in mud and water—give them salt occasionally. Give salt and sulphur to cattle and sheep regularly—it will improve them and keep off ticks. Keep an eye to the dogs, and administer blue pills freely to all wandering sneaks. Try and get everything in order and readiness.

WOOD ECONOMY.

"A penny saved is a penny earned."—*Poor Richard.*

There certainly never was a people under the sun who could boast of a greater development of the organ of destructiveness than the Americans. We rather boast of it, as our peculiar mission, to fell the forests and wear out the soil. But we ought to begin to feel satisfied that we have carried the matter far enough, and now strive to amend our errors by practicing a sounder economy.

As to giving up the old worm fence, there is no hope of that, as long as there are ten trees to an acre; but certainly we can economize by having fewer divisions, fewer fences, and straighter *worms.* But we can economize in other ways—we can cut our timber at the season when it will be found most durable, and we can select timber the *least* valuable, for fencing, and leave the best for more important uses.

It is miserable economy to go into a forest, and select the young, thrifty, vigorous trees, white oak, post oak, red oak, ash, &c., for rail timber, because they are easiest to split, when you see standing all around you, old trees which have long arrived at maturity, and in a few years will begin to decay, become wind-shaken or be blown down. Every day they are decreasing in value, while the

young timber every day grows better in quality, and more valuable on account of the demand that an increase of population or prosperity always brings with it.

There are hundreds of old oaks in our forests, which may be rived up into boards, and they are allowed to stand, because "they are too brash," and the young timber is taken—this is worse than paying interest on your note while your pocket is full of money.

We have seen pretty good boards made out of trees that had been passed by as worthless from year to year. In fact these very remarks have been extorted by seeing a fellow riving boards out of a hollow oak that had been blown down a year ago.—Upon our asking him if he could make boards out of a hollow tree, he replied that "he had to heart it anyhow, and its being *hollow*, if anything, was an advantage." We went right to work, and the consequence is that we soon saw about 2000 feet good boards made out of a big oak which had been blown down some time ago. How many trees blown down by the wind, or cut down by possum hunters, are allowed to rot on the ground, when they might be converted into boards, rails or firewood. Will people never be convinced that wood is growing scarce, and that it would be a wiser economy to clear less, and save all the timber, by cutting it and piling it on our old fields, for future use, than to belt the whole forest, and be always in dread of trees falling on your negroes, horses or cotton? But if you will cut down and destroy, do, for goodness sake, save the best timber for the use of the mechanic arts. What ought to be said of a people who live in the woods, and yet send to New England for the hubs, felloes and spokes of their wagons and carriages?

CORKS.

There are a great many short paragraphs, valuable hints, and precious bits of information, nearly always to be found floating about upon the current agricultural literature of the day. They sink out of sight sometimes for a short season, but are soon sure to bobble up again. "A sure preventive for the apple tree borer has been discovered by a distinguished French Pomologist—wash the bark with a strong solution of aloes"—tried it—wouldn't do, and we have tried salt and soda, ashes and potash, to as little purpose.

"Tansy planted about the roots of the peach tree will be found a sure preventive of the Egeria or peach tree borer." We were telling this to a friend, who replied "Well, I'll test the matter—I have a seedling peach, which came up in a bank of tansy, and has never had anything else about it." Upon examination found it literally bored to death. We have seen it stated that blue grass or clover sward was a preventive—that won't do, and we have proof enough of it. This borer will find his way into the tree at some point—it is his vocation—he lives for nothing else—he works when we are asleep, and it will require no ordinary industry and sagacity to keep him out. We noticed, in a pomological talk among several pomologists somewhere lately, that soft-soap is the most reliable application.

One of the most amusing prescriptions is, to drive a temporary nail into each tree, and a *soi distant* scientific gentleman, as in many similar cases, supposing it to be a fact, set to work to prove scientifically that it was philosophically true—that the oxygen elaborated in its union with the iron, a substance which was death to all insects.

A sure way to keep the fly out of barns: Of these there are many prescriptions; smoke with china berries, roll in dry ashes and lay each ham separate on scantling, roll in lime, rub with soap and meal, sift black pepper thickly over them before you hang them up, dust red pepper over them, sow them up in bags, stuffing hay well around them, and hang up in a dry place; but the richest thing we have seen in many a day, is the remedy of a correspondent of Cloud's Rural—to kill your hog in winter in the dark of the moon, cure and salt as you may, and your meat will neither shrink or be skippery. Louisiana has the credit of this moon-struck philosophy.

But our readers may rely upon it that no remedy will prove efficient unless the meat is well cured and snugly put away out of the reach of the skipper, *before* he makes his appearance, which is generally in January or February, the first warm spell. If so cured and put in good bags, well sized (boiled in the sizing), not a hole in them, the hams will keep sweet and sound for years.

RESCUE "REDIVIVUS."

Every now and then we fall in with some new beginner on a grass hunt—looking anxiously for that which will reclaim the old fields around him, and make verdant the barren landscape. It is the most natural thing in the world for beginners to ride hobbies, and to fancy that they see in the future the dreary old fields about them blossoming like the rose. It is the easiest thing in the world to do it all on paper, or to prove it by figures, but earth and paper are very different things, and facts of the field and figures of the fingers don't always go together.

In a late number of the *Rural Gentleman*, Dr. Phillips advises a young candidate for verdant honors to try "Rescue;" in despite of all said against it, the Doctor says it is a great grass; but it is necessary to sow it on land that will be good for fifty bushels of corn per acre—prepare well by plough

and harrow—graze lightly first year—next year apply fifty bushels cotton seed—plant corn and peas—cultivate level, and next winter you have a Rescue coat. Well, this is all very good; but would not barley, on such land, pay better? or wheat or clover? We have tried the common cheat, and found it make as good a hay, and much taller, and yield as much seed, and afford as good a winter pasture as Rescue, and grown where Rescue would not grow.

Botanists say that Rescue is not a cheat; we make no pretensions to botanical lore, but think it resembles it, in more particulars than one. The introducer of Rescue claimed for it, that it would renovate the old worn-out fields—that it would fill up gullies, fatten your stock, and store the larder. Has it done so? Has it answered the expectation of its friends? How many men would now be willing to give twenty dollars per bushel for an experiment? More than this, how many can afford to give up to Rescue, land that will bring fifty bushels corn per acre? If Rescue will not grow well on poor land—and we have never heard otherwise, but from Mr. I.,—it must be an exhauster, if fed off to stock, and, so far, no better than barley, wheat, or rye. Has it a tap-root like clover, to bring up salts from the subsoil? Does it not go to seed, and drop its seed at a season when the ground will be left exposed to the sun of summer, and liable to be taken by the weeds of autumn?

While we are on grasses——Dr. P. asks some friend, or foe, to send him some "Ferrel Grass."—Has he not growing upon the banks of some of the creeks about him our common wild rye grass? It is common to almost every stream in South Carolina—is a good winter grass—loves moisture and rich soil, and drops its seed in July. It is perrenial, but does not resemble Perrenial Rye Grass in the books, which, like cheat, shoots out several heads on the same stalk. This has one head and looks like rye.

The Randall grass we know nothing about—have seen some laudatory expressions about it. It will very probably turn out to be some old favorite trumped up again. As Dr. Phillips is not afraid of Bermuda, however, he may try anything but Means or Nut. The Stanford's Wild Oat is another grass which has been sold, as a new discovery, at fabulous prices. Any gentleman who will send to Thorburn for a bushel of English Wild Oats Grass, will find that he has the same thing, at one dollar and fifty cents per bushel.

During the last twenty years we have had the Guano furor, the Mosquite, the Yellow Clover, the Rescue, and "Stanford's Big Injun." They have nearly all died of extravagant puffing. The truth is, it is our misfortune that this is not a grass country; the crop grass is about the only grass that really prospers under our treatment. Our summer sun is too hot—our climate is subject to long droughts and to sudden changes—in addition to which we plant cotton as a staple crop, and it interferes with all other pets. On many plantations there may be spots well adapted to some variety of grass—on moist or swamp land we have found nothing equal to "Red Top" for winter pasture or for Hay. The native swamp grasses make very good hay when properly cured, and if well set, should never be abandoned for an experiment. Very large crops of excellent hay from the native grasses are annually made by Maj. Theo. Starks, on the little branch swamps near Columbia; and a visit to this gentleman's farm will convince any one that a small plat of swamp land will pay well by being put in grass.

Capt. Frank Hampton has exhibited fine specimens of hay at our Fairs, and very large yields from the Bermuda Grass, which has taken possession of so much land on the Congaree. Could not this Bermuda grass region be made to pay better in fattening cattle and sheep for market, or in growing hay, than by any other course? It seems to us to be the best region for a combination of farming and planting in the old States.

Red Clover, painful experience has convinced us, is not to be relied on, save as fancy patches, where an abundance of lime exists in the soil, or on the rich flats near the base of the mountains. Clover is so much relished by hogs, in fact by every animal, that we advise everybody to make the effort; we have found nothing equal to it when it succeeds. But you may put it down as an axiom, that no cultivated grass worth having will flourish or *pay* upon poor soil and poorer treatment. The natives may be able to take care of themselves, but whenever you introduce a foreigner, if you wish to please and keep him, you must feed him high and keep a constant eye to his comforts.

ADULTERATION OF SPECIAL MANURES.

The attention of our readers is directed to an extract from the Maryland State Chemist's Report, and also to the remarks of the *American Farmer*.

The increase in the use of guano in South Carolina, during the last year, has been immense; in truth, we find it being generally introduced throughout all the older plantation States, and even pushing its way into Alabama and Mississippi. Doubtless much of the increase of the last year's cotton crop may be attributed to the use of guano. Whether it will work out the problem of *resuscitation* we have been so ardently bent upon, or only hasten the exhaustion of an already impoverished region, is yet to be determined. The partial abandonment of its use

in the States where it was first used so extensively and hopefully, looks somewhat ominous.

One thing, however, is certain; we ought to import our own guano, and have an inspector for all chemical fertilizers, to protect the agricultural interest against fraud and imposition. It is very important to get as far off as possible from that "peculiar earth on the southern slope of Hampstead Hill," near Baltimore. One thing nobody can doubt—the demand for guano has been wonderfully stimulated by newspaper puffs, bogus certificates and flaming advertisements. The press, now-a-days, would puff the Devil a Saint, if paid for it.

"No one in fact who considers the amount of money expended annually in the various fertilizers which go out from this market, the great temptation to frauds, and the facility with which they may be committed, will fail to recognise the necessity of some method of protection.

The money value of the several fertilizers introduced into the Baltimore market for sale during the past year, exceeded the sum of three million of dollars. Forty thousand tons of Peruvian Guano, at $60 per ton, $2,400,000; twenty thousand tons of Phosphatic Guanoes, at an average of $20, $400,000 more, and the Bones, Compounds of Bones, Animal Manures, &c., $400,000 more, perhaps, give us more than this enormous value, offered to the farming community in this market within one year. That these fertilizers may be adulterated to the extent of ten *per cent.* of their value, without the detection or even suspicion of fraud, cannot be doubted. That the facility with which frauds may be committed and large profits realized, has a tendency to attract dishonest dealers to the trade is manifest. That very gross frauds have been detected occasionally by accident, is well known. But the laws of the State afford really no adequate protection against them, and so enormous an outlay of money is made at the mercy of those who, by whatever means, can get some amount of credit for honest dealing. We do not at all design to discredit generally the dealers in fertilizers. We are well aware that there are men of character among them, as reliable as in other branches of trade, but it is a fact well known to us, that there are those who have puffed and advertised themselves with greatest diligence and some success, who are least worthy of the confidence they have sought."

A VOICE FROM OVER THE WATER.

The following extract is the conclusion of a very sensible writer on the statistics of the United States, lately published in one of the agricultural periodicals of Great Britain:

"We sum up our review with the following propositions: First, That the deterioration of the land of the Eastern States, and the diminution of the produce, is the necessary consequence of the opening up of the fertile lands of the West, which has drained off a large portion of the agricultural population of the East, who are now competing with those of the parent States in the markets of the Atlantic seaboard; that this cause is aggravated by the migration to the gold fields of California, by the large number of hands required in the construction and management of the numerous railways, and by the absorption of nearly 700,000 male hands in manufactures, which are supported by a tax of five dollars a head on the whole population, amounting to nearly 200 dollars per head for every operative manufacturer in the States.

Secondly. With regard to the future of the United States, it is evident from the present position of agriculture, that, unless an alteration takes place in the system of husbandry, and in the policy of the Government with regard to the manufactures, the agricultural produce of the Eastern States must continue to decline until they become dependent for a supply of "bread-stuffs" on the West; and that the abundance of rich land in the latter, still unoccupied, will continue to draw off the population and absorb the emigration from the East, except that of the large cities, which must still be the emporiums of European and American commerce, and, as such, will increase in proportion to the filling up of the Western States. On the other hand, notwithstanding the cheapness with which grain can be raised in the West, the expense of transit, whether by railway or by lake and canal navagation, which cannot be reduced, will prevent the exportation of wheat to Europe at a less price than from 36s. to 40s. per quarter; nor can the Eastern States, having a higher rate of labor to pay, and requiring more of it, produce grain profitably at a lower price.

It will be said that we have borne hard upon the manufacturing policy of the United States, and we admit the impeachment. But it is because it is contrary to all the principles of good government to compel a people to purchase at the dearest market, in a vain attempt to establish a system which must sink the moment the protection is withdrawn, and whilst the capital and labor absorbed by it could be so profitably employed in cultivating the soil.—However, it rests with the people themselves; and if they still like to be taxed for the sake of having it to say that they are a manufacturing as well as an agricultural people, the only thing *we* can say to it is—in the words of their own Franklin—"They are paying very dear for their whistle."

THEORY—SINKING OF SOUTHERN PAPERS, &c.

"A knowledge of the principles that may be necessary to follow in cultivation, is called theory; the application of these principles to cultivation is called practice; and he who applies them is called an agriculturist or farmer. In the theory and practice together, consists the art of cultivation. To be a good farmer, it is not only necessary to possess a knowledge of the theory, but also to know how to put it in practice."—*Elements of Agriculture.*

"If such be theory, then the charge made upon the agricultural papers of Mississippi by "Y." of Mississippi, as being too theoretical, would be simply finding fault with the conductors for doing their duty—in giving forth the principles to be executed by the masses. We presume the cause of failure of another Southern enterprise, *Russell's Magazine,* in Charleston, S. C., is also owing to having too much theory.

"No, sirs, we fear the South is giving over to ruin, for it seems we are all mad already. 'Whom the gods would destroy they first make mad.' We can patronize Yankee papers, and teachers, and preachers, and pedlars, dry goods merchants, and

all that, and all is well; but put forth a Southern enterprise, even down to a small agricultural paper, and there is a something not very pleasant about it—something wrong. As to ourself, had we the power, we would cure all such as whisky drinkers are cured—mix whisky with all they eat or drink—we would give them Yankee so."—*Southern Rural Gentleman.*

This is a palpable hit. Will we always believe that "foreign cattle have long horns?" Will we never believe that anything good can exist amongst us? What right have we to complain of the Northern people sneering at our want of intelligence and public spirit, when we allow our own literary and agricultural enterprises to die for want of support, but pamper up the publishers of such trashy free-soil magazines as *Harpers*, and many others? In a State boasting of its being *peculiarly agricultural*, and containing some 30,000 agricultural people, we cannot sustain a dollar monthly—no, we *will not* sustain it—that is the proper expression. If a man be too poor to afford more than one agricultural paper, for goodness sake let him take a Southern one—one adapted to his soil, his climate, his institutions. But our readers will be surprised to learn that a great many *patriotically speaking* gentlemen—some who have been most loud-spoken in their complaints about Southern apathy, in times past, are now getting up subscribers for journals out of the cotton belt.

For the Farmer and Planter.

OBSERVATION.

Mr. Editor:—I heard a somewhat amusing dialogue between two friends, which is suggestive of the importance of observation. One was an enthusiast, and always full of some one idea; the other clear headed and practical, and always looking for facts.

"You need not talk to me," says Mr. Enthusiast, "about it—I know I am right. Why, I have tied strings around cotton forms and blooms, and examined them twenty times a day." "Yes, and you might have examined them a hundred times," retorted Mr. Practical, "and then know nothing about it."

The gift of observation is a precious one. I have seen some men who could boast of very little intellect or intelligence, yet they observed a great deal, and did it well; and I have seen others remarkable for their good sense and learning, who would cultivate a farm for a life-time, without picking up an idea in the field.

I am inclined to think the greatest obstacle in the way of our agricultural reform, is this very matter of a want of observation. If we would study the results of experiments more carefully in the field, if we would watch nature's operations, and take a little more pains to understand the methods she uses to restore her exhausted energies, and the efforts she makes to overcome the difficulties we throw across her path, we would, I think, arrive at more practical conclusions than we often do, by poring over the analysis and investigations of the faculty. I am beginning to lose faith in those learned professors who awhile back promised so much. They have led me into many labarynths, and left me there to work my way out as I best could.

We are all too much in the habit of following in the footsteps of our predecessors, of believing they were right because they were successful. We don't look at the field and study its wants—why it failed last year or succeeded this; we don't study the seasons and their influence upon the crops, near as much as we ought to do. If we did there would be more pleasure, as well as profit, in our business. Now, here is a case in point.

I have a field upon which I had failed to get a stand of corn in 1848 and 1849. It was always either eaten up by the budworm, or it never came up.—In 1849, after failure to get a stand of corn, in June I drilled peas on it; got a pretty good stand. I cured vine and all in October, and found it good food. In March, 1860, bedded the field up for Sorghum, 3 feet distance, but finding it mellow, and in better condition than I ever found it before (was it the result of the peas?) crossed it 5x3, and contrary to everybody's opinion and my own too, planted *on the bed.* I got a fine stand, and it has outgrown any corn on the plantation. It is a stiff clay field, with a tenacious yellow or white clay subsoil running under it, that holds water like a jug.

The other day I had a big rain, and it swept like a creek through a part of the field (where an old road once ran), cutting down into the subsoil, and exposing the corn roots. And here was the whole matter explained. There were hardly any roots within three inches of the top of the bed; they began to spread out below that, and right over the yellow clay subsoil were spread out that beautiful network of delicate roots which fed the corn.

Now, what were these corn roots doing away down there, spread out like a spider's web over the pipe clay? Did they go there to avoid the water on the surface? Did they go there to be ready to drink up the fertilizing solution which came down through the bed and could not get through the pipe clay? Or did they go there to keep out of the way of the plow? Their healthy condition showed that they made something by the visit, and their deflection from the horizontal direction they first took from the stalk, showed that they went there, I think, on purpose.

I saw a remark from some great Agricultural

Chemist lately, perhaps Liebig, saying it was all nonsense to say that roots went in seareh of food; that they had any preferenee, or exercised, as it were, any diseretion. It may be so, but I would like to know why it is that you cannot apply manure to roses or shrubs in a yard amongst forest trees, but the roots of the trees will find it out and reap the benefit.

But to return to my corn. I was surprised to find that, in every instanee, with large stalks and small ones, the extent of the limbs corresponded with the extent of the roots, and when dried and cleaned, the roots weighed a few grains more than the leaves and stalks. If I could have taken them all up I think they would have outweighed the tops considerably. The germ root, after having performed its function, grows very little—there are very few fibres conneeted with it. Above it other roots strike out, getting regularly higher as the corn advanees towards maturity, and the last roots are the braee roots and dew roots. It is an interesting and instructive feature, that the roots grow longer and spread more and more through the soil, as the plant advanees toward maturity, and would seem to indicate unmistakably that the cultivation should be adapted to their progress, by plowing shallower and farther off from the eorn as it grows.

One of my neighbors (an old farmer too) thinks that you ean't plow eorn too deep or too elose—eutting the roots does more good than harm, he says, anyhow; but I think that it is getting to be the generally reccived opinion, among intelligent farmers, that eutting the roots is a neeessity, or rather a choice between two evils—the grass must be killed, and as everybody plants more than they can cultivate well, the most expeditious means must be used to smother up. Now, if the soil ean be kept loose and the grass down, common sense would say superficial eulture would be the best; but if our spring rains paek the earth together, it may beeome neeessary to plow deep, and if we let a eorn field stand four weeks it eertainly will be some trouble to kill the grass.

I have spun you a pretty long yarn, Mr. Stokes, but it may set somebody to looking a little closer into things, and deriving some instruetion as well as pleasure from it. A. P. M.

For the Farmer and Planter.

COTTON SEED ON CORN.

Mr. Editor:—Permit me to use a small spaee in your very exeellent monthly, in order that I may solieit from some one or more of your subscribers and yourself, an opinion, founded on experiments made, as to the relative value of cotton seed applied as a manure to corn, in a green and unkilled state, and in a killed state; and also whether green seed, in a seasonable year, do mueh better than they would in a dry year, eompared with the killed seed. I have, and still believe, that the green seed applied to the corn, at the time of planting, at the rate of 15 bushels per aere, will produee as good, if not a better erop than the killed seed, in the same proportion to the aere, but I believe it is indispensable that they must be eovered up effeetually at the first working the eorn reeeives, which gives but little additional trouble to him who thus uses them. Is it not likely, yea certain, that the killed seed lose as much or more of their strength by being hauled out and then handled again in small quantities, as the green seed do by being permitted to eome up and shortly thereafter covered up effectually; and is it not eertain that the green seed, being killed in the ground, that it receives from them that strength which escapes from the killed seed, and thus being in the land, last to the time of earing, and do more good, at that trying erisis, than would the killed seed. If I am mistaken on this point, I wish to be set right, and therefore these inquiries.

ONWARD.

[Will some of our correspondents give "Onward" the desired information. Praetieal experiments on the subjeet will be valuable.]

For the Farmer and Planter.

"PEEPS OVER THE FENCE."

"Procrastination is the thief of time."

How many of us, Mr. Editor, sitting upon a slab beneh in a eountry school house, by the dim light of a log-eut-out window, have written over this eopy a thousand times, with a very poor appreeiation of its wisdom. There never was penned a more important lesson, morally or physieally, mentally or agrieulturally. Did you ever know a boy who intended to begin studying hard next Monday morning that made a good seholar? Did you ever know a good farmer who never had time to do anything, and was waiting for next week, when he intended to fix up? Now, there is my neighbor, Capt. Bustle; he is undoubtedly the busiest man I ever saw—never has time to do anything—always has a dozen irons in the fire, but he intends, so he has been saying ever sinee I knew him, "as soon as he gets a little time, to straighten out things wonderfully." The other morning I found him in a terrible stew; a heavy rain had fallen—he wanted the hoes to clear out some ditehes whieh had overflowed, from a neglect to clean them out at the last plowing.

"Where are the hoes?" eries Bustle.

The negroes run here and there, and after an

hour's search, a few old stumps, loose on the helves, are paraded.

"Can't you find a better hoe than that, Jack?"

"No, sir."

"Well, I'll get some new ones the first time I go to the village."

Next Monday, mind you, Bustle was to begin to chop out cotton. But everything about Bustle's premises told the same old story of putting off for to-morrow what should be done to-day.

He was in a great fume about neighbor Fussy's pigs rooting up a field of corn—"the prettiest stand you ever saw," said Bustle. And Fussy said he had told Bustle over and over again that those old water racks of his wouldn't keep out a yearling, but he was always waiting for "a spare time to fix up things."

Bustle lost a fine horse a few years ago, by his getting hung in a stable door, which could have been fixed in half an hour, and the worst of it was, he owns a very good smith.

Bustle is scarce of corn, yet his hogs have eat up a wagon load by drawing the ears through a break in the floor, while he has been waiting for a time to fix it up. Go into his field when you may and you will find his plow hands banging with a rock at the plow handles, or tieing them on to the beam with a withe—all because the smith has not time to make a staple.

Bustle has no back-bands on his mules, and the plows go bobbling about every way—he can't take time to make them; he never can take time to make muzzles, and the mule, nipping at this and that stalk, staggers over and knocks down a good many barrels.

Bustle has a very good cutting knife, but can never find time to cut up his food—says the overseer says he has not time to do it.

But yesterday his wife was in a terrible stew about her Irish Potato patch being rooted up—all for the want of a nail in a gate slat—one nail in gate slat *vs.* many messes of good Irish Potatoes. Make the calculation reader, and profit by Bustle's being too busy.

Bustle's wheat wants cutting, but he can't take time till he gets over his cotton, and many a bundle will, when cut, tumble down and spoil before the busy fellow can find time to haul it in.

Bustle's stables have no hasps on the doors—there are holes in the roof through which leaks may destroy tons of provender; his gates are ricketty, and yet there never was a more industrious, energetic, get-up-by-3-in-the-morning and go-to-bed-at-10-in-the-night fellow in the world.

It is a whoop and a hurrah with him from year's end to year's end; as he often says, "well it is hip and thigh with us, but some of these days we'll get out and fix things up right." And Bustle believes it—he knows his failing, and the fellow intends to "fix it all right," but the longer he lives the less time he finds to fix up. SNUB.

For the Farmer and Planter.

TAXING DOGS.

Mr. Editor:—Newberry is certainly the "Banner District" in the State. The Tax Collector recently published in his report there were but *thirty-three* (33) taxable dogs in the District. How consoling this must be to sheep rearers, and to all good masters in Newberry, for "nigger's dogs" will kill sheep, and every "nigger" who owns or is allowed to own a dog, is most often a strolling, pilfering scamp. He steals while his dog stands sentinel.

I have heard of a planter over in Fairfield, who paid thirteen dollars ($13) tax this year for his negroes' dogs. What could have been his object?

Yours, &c.,

MUTTON.

For the Farmer and Planter.

THE SMITH PLOW.

Spartanburg, S. C., June 26, 1860.

Mr. Editor:—Please allow me the use of your columns for the purpose of noticing the merits of a new plow recently patented by Messrs. D. H. & E. E. Smith, of this District. Something has previously been written concerning it, but I have not yet seen as thorough an exposition of its mechanical construction and practical operation as I think it deserves. The writer has used the aforesaid plow almost exclusively in the cultivation of the present crop; and his farm, embracing almost every variety of soil—upland and lowland, rocky, sandy, pipe-clay and red soils—he has had an opportunity of fairly testing its virtues; and, having thus tried it, I unhesitatingly pronounce it superlatively the best plow I have ever had on my farm. The stock combines strength, lightness, correctness of *set*, and adaptation to the use of any bit—shovel-tongue, subsoil, twister, or sweep. I have seen the ground broken up four inches deep with a common tongue-bit upon this stock, when the plowman could barely make an impression with the same bit upon an old-fashioned wooden stock. But as the stock, with all the common bits, have been exhibited twice or thrice at the State Fair, and thus made sufficiently notorious, I shall confine myself to a description of the patented Turning Plow:

The entire wing of this is cast, with a sufficient inclination forward to upset the soil completely.—The land-guage side is ground so as to admit a wrought-iron point, which extends backward far enough to prevent the plow from *rocking*, and to make it run level. The point of the casting is ground ob-

liquely, for the purpose of screwing on a steel plate —one side of which fits into a channel cut on the inside of the long point—and thus you have a complete cast turning-plow with a simple steel point, which latter, the commonest blacksmith in the country can make in a few minutes. This is fastened to the stock with a bolt, so that the position of the latter in the eye of the foot will determine the depth of the plowing, which may be from three to seven inches deep. Its weight is about ten pounds, and cuts a furrow-slice about eight inches wide.—The draught is lighter than any twisting shovel I have ever used—depth and width of the furrow being equal. Besides, it is easier on the plowman, he having nothing to do but hold up the handles and guide the horse; he cannot ride it, for then the point flies out of the ground; he can't cheat, for when he attempts to make it cut more than the width of the point, it becomes unmanageable. Finally, it is a cheap plow—the stock and casting, with proper care, will last an age, and the only expense attached to it consists in furnishing points as they wear out, which are worth about twenty-five cents.

I make this communication as due the genius and industry of the inventor, Mr. E. E. Smith. A long acquaintance with both the man and his work, warrants me in recommending him to the patronage of the farming community. He learned to *use* the plow before he learned to *make* one; and, while using the *old one*, he had the opportunity and intelligence to perceive its defects, the inventive genius to suggest the remedy, and the active industry to supply it.

Respectfully, E. H. B.

From the State Chemist's Report.

ADULTERATION OF GUANOES.

Among many chemists in Great Britain, who have paid much attention to Guano, as well as to its adulterations, I may mention Prof. Nesbit, of London, Doctor Cameron, of Dublin, and Prof. Anderson, of Glasgow. It does not appear necessary, however, to quote the results of any of their numerous analyses, as a sufficient number have been stated to shew the composition of the unadulterated Guanoes accessible to the farmers of Maryland.

It appears that the adulteration of Guanoes, especially the Peruvian, is very extensively practiced in Great Britain, and I regret to be obliged to believe that frauds of this kind are also perpetrated in our own country.

In order to protect our farmers against such impositions, the system of inspection of Guano was instituted in our State, and it has doubtless been a means of protection to a considerable extent. But yet it appears from the testimony of many farmers, that they have palmed upon them sometimes inferior or adulterated Guano, with the Inspector's mark upon the bags. Gentlemen have informed me that boatmen who have brought them Peruvian Guano, have offered to furnish them with good new bags, for the Guano bags containing the Inspector's mark! Suspecting, however, that they were wanted for dishonest uses, they refused to part with them.

There is a peculiar earth on the southern slope of Hampstead Hill, near the eastern limits of Baltimore, of which I have been informed large quantities have been, and may still continue to be, secretly carted into the city. There being no conceivable honest use for which this material can be brought into the city, and it being very similar in color to Peruvian Guano, it was reported to be used to adulterate that article, the mixture being put up and sold in old Guano bags, containing the Inspector's mark!—Some months since, the Inspector called the attention of the police to the affair, who arrested parties carting away Guano bags during the night.

The arrest was evidently made at an injudicious time, because, upon examination, the bags were found to contain only the earth. If, however, the parties had been watched until they had taken it to their mixing depot, and completed the crime, they might possibly have been properly punished.

During the late season of active field work, I endeavored to collect for examination, samples of Guano, ground bones, artificial fertilizers, which had been purchased and received by my farming friends. Finding but few kinds in their possession, I requested that samples might be forwarded me whenever they shall again purchase.

Among others, I got in person a sample of Guano, from Col. Jno. S. Sellman, of Anne Arundel county, which, being sold for Mexican AA, should have contained phosphoric acid equal to 55 per cent. or more of phosphate of lime, and yet the analysis showed but 36 per cent. In this case the Colonel paid for 50 per cent. more phosphate of lime than was implied in the purchase, and if the deficiency had not been discovered, he would have suffered a still greater loss by not applying a proper dose of the phosphate to his soil. How much of this Guano was sold and used by farmers, I have no means of knowing.

Samples of other Guanoes and fertilizers, have recently been received, and are under examination.

In using an ammoniated Guano, we should always mix with it a portion of ground plaster in order to prevent the escape of the ammonia or its carbonate. I may add also, that the experience of those who have several times applied Peruvian Guano to the same field, has generally shown that, after the second or third application, it produces little or no good result, unless other manures are also applied. In England also, the same effects have been observed.

This has been attributed to the large proportion of ready-made ammonia, which tends to promote a vigorous growth of crop, and thus rapidly abstract the essential constituents of the soil, including its phosphoric acid. It is for this reason that a better permanent effect results from mixtures of Peruvian and Phosphatic Guanoes, than from the former, when applied alone.

Trees for Shade.—The *Genesee Farmer* says that, on the south side of a dwelling, where shade is desired, it will usually be best to plant deciduous trees, as they will afford more shade in summer, and admit the cheerful rays of the sun in the winter season. Deciduous trees are those of which the leaves fall in autumn.

Horticultural and Pomological.

WILLIAM SUMMER, EDITOR.

MONTHLY TALK WITH OUR READERS.

From the unfavorable condition of the seasons the past month, but little sowing could be effected, and the work for July may be continued. The turnip crop and its preparation will require special attention. The land should be pulverized by repeated plowings and harrowings, until it is made very fine and deep; and if not made sufficiently rich should receive a good dressing of ashes, good old compost manure—unfermented manures will injure the crop, causing it to run to *top*, and rendering the roots rough and bitter. Select the best varieties for sowing. If sown broadcast, one pound will be sufficient to the acre. After the land is properly prepared and harrowed smooth, sow the seed and pass a brush over.

In order to hasten vegetation, and by this means escape the ravages of the fly, so destructive to the turnip crop, *Peruvian Guano* and super-phosphate of lime, we have found the best fertilizers we could use. From one hundred and fifty of the former to two hundred of the latter to the acre will be sufficient to produce good crops. The best varieties are White Norfolk, Robson's Golden Ball, Yellow Stone, and Yellow Finland, White Globe and Yellow Aberdeen.

Ruta Baga.—The value of this excellent root is becoming better understood, and of course more highly appreciated; and we are happy to learn that many of our planters who have not heretofore planted it have made up their minds to commence its culture this year. This is important, as the grain crop in many sections has been cut off seriously by drought, and this crop will be found an important aid in helping out a scanty grain crop. We are certain that there is no one who will give it a fair trial that will ever neglect its cultivation hereafter, for besides the great yield when it grows under favorable seasons, the great ease with which it may be kept through the winter, should recommend it to all, as it may be kept by simply throwing a furrow on either side of the root, and thus gathered from the field as wanted for use. Its culture is simple. It requires good ground, and if super-phosphate is used, the crop will make fine large bulb and small tops. With respect to the preparation of the ground, all that is necessary, after being thoroughly prepared and pulverized, is to lay off the ground by running two furrows, at intervals of 27 inches, to form a slight bed. On the top of these sow your seed. If by hand, as thin as you can sow them. Cover lightly with a rake or tight brush harrow.

When the plants are up, and they have passed the ravages of the fly, pass the harrow cross-wise over them. In a week from that time, run the cultivator through, so as effectually to clean them of grass and weeds, and then either with the hand or hoe thin out to 10 to 12 inches apart. If you have not a turnip-drill (which is a great saving of seed and labor) you may prepare a substitute by using a bottle with a quill passed through to let out the seed. Ruta-bagas should be sown as early as possible this month, though with the use of guano and super-phosphates we have made good crops sown as late as the 25th. Other turnips may be sown at any time to the end of the month.

Plant Cucumbers for pickling. Transplant Cabbages. If properly cultivated and enriched they will close up and make excellent heads in November and early in December, before the cold weather sets in.

The Grape crop will be in great perfection this month, and we are pleased to see that our friends at Aiken extend a general invitation to all who are interested in its culture, to meet in Convention, on the 21st. Let all who can attend, as much information will be derived from seeing specimens of the various native grapes exhibited, so admirably adapted to our climate.

CIDER.—BEST METHOD OF MAKING IT.

The apples from which cider is made should be picked from the tree—all premature ripe or unsound apples should be rejected—and the fruit should be preserved until it is ripe. The celebrated Newark cider, which commands a good price in Southern markets, is made from the Harrison and Canfield apples, as their juice contains a much larger per centage of alcohol than almost any other kind of apples, except perhaps the Hughes Crab, from which the best cider for keeping is made with us. It makes a cider slightly astringent, light colored, keeps well, and holds its carbonic acid in bottles better than any other kind of cider, seldom or ever becoming turbid. Cider is made from all kinds of apples of good quality, for present use. The apples should be reduced either by the mill or beating, as nearly as possible to a uniform mass, and by exposing this mass to the operation of the atmosphere for a few hours only the specific gravity of the juice will be increased several degrees; and for making fine cider the pulp should be exposed for twelve to twenty-four hours, according to the temperature of the weather, in the meantime spreading and turning it, to facilitate the absorption of oxygen, which will give the adition of sugar. The color may be materially varied by the management of the pulp, and its quality may be delineated in proportion to its

increase of color. This fact may be thus explained: If an apple be broken, on exposing it to the atmosphere it will become brown, which is caused by the sugar taking up oxygen, thus causing it to undergo the same change as does sugar in a refinery when converted into molasses. The difference between molasses and loaf sugar is not greater than is the difference of flavor between the juice squeezed suddenly from an entire apple, and that taken from an apple previously ground, and for some time exposed to the atmosphere. It is then put into the press, from whence the liquor should be strained through a hair sieve, or a bag made of grass linen. The cider should then be put into clean casks and kept in a cellar where the temperature will be about 70°. An active saccharine fermentation will commence in a few hours. This should be permitted to continue, with the bung loose, until the hissing sound—so readily discernible where carbonic acid gas is escaping—shall cease. The cider may now be racked off into clean barrels, separating it from its sediment, and again suffered to ferment after being "bunged up;" the bungs, of course, being loosed as before. This fermentation will be of short duration. The cider may now be racked again; the bungs should be tightly closed, and if intended for use or draught, should be kept in a cool cellar; if intended for bottling, it should be bottled early in spring or mid-winter in our climate.

The best method for refining the cider is to prepare a narrow, deep hopper, and form layers of sand and charcoal, (that prepared from maple wood is best) and place at equal distances three or four strainers of flannel; the impurities are soon freed from the cider, and it is thus rendered of better quality, and more easily preserved. This should be done when the cider is first drawn from the cask, or soon after it comes from the press. Bottled and prepared from Hughes Crab, or some other cider crab of equal quality, it will be found equal to the best champaigne.

For the Farmer and Planter.

THE IRISH POTATO.

Mr. Editor:—I notice in your last issue that your correspondent, "A. J. H.," has been experimenting in the cultivation of that delicious dish, the Irish Potato. I had been thinking of communicating my experience, in the cultivation of the same crop, when I received your paper—and I am glad "A. J. H." has spoken out, for it gives me encouragement to find one like myself, who delights in the mealy brogue of *swate ould Ireland.* By the way, the Irish potato is a much more economical crop than many suppose. There is no food more healthy and nutritious for little negroes, and they are remarkably fond of them. They are very easily raised, and I see no reason why we should depend on Yankeedom for a supply.

Hog-hair has been esteemed in this community, since my earliest recollection, to be a valuable aid to the Irish Potato. Whether as a direct manure, in furnishing oil and other constituents to the plant, or as an indirect one, acting only mechanically, I am hardly prepared to say—probably both. It is always stored away in barrels, or otherwise, immediately after "*Hog-killing,*" and applied on the top of the potatoes when planted. My rule is to place all the manure I use on the top of the cuttings. The potato never fruits below where the seed sprouts, and consequently all manure placed below the cuttings, will be completely lost to the fruit. When manured in this way the vines grow too rich in the spring, and never fail to die out early in June, without producing any fruit. Such, at least, has been my experience. I have tried both plans.

Have your ground well spaded, raked and leveled —make your trenches large and tolerable deep, from three to three and a half feet apart. Without any further preparation cut your potatoes into three or four parts, and drop in the bottom of the trench, from six to ten inches apart. Place a handful or two of hog-hair on each cutting, and fill up the remainder of the trench, "brimming full," with lot or hog-pen manure. I have always found hog-pen manure the best (and the most thoroughly rotted is not always the best). Draw up just enough dirt to cover the straw manure good. As soon as your potatoes are up commence drawing dirt to them, and continue to increase your bed until they commence blooming, when they should be let alone. I have never seen any advantage derived from putting straw around the vines, after they get up. It was a custom, a-long-time-ago, to place pine-straw in the middle of the beds, immediately after the last working, to keep the beds cool, and also to keep down the later grasses; and I am almost certain that it might do well to commence the practice again. A boiling sun is very injurious to the flavor of the potato.

I have supposed the land to be sufficiently strong to produce vegetation, for I do not believe that manure will pay a heavy profit, in the drill, on any crop, on a poor sand-hill. On lands of this class, I invariably broadcast and plow in for corn or cotton, so if your land, that you intend to plant in potatoes, is very poor, the best plan is to broadcast surface with guano or super-phosphate before you commence spading, and manure also in the drill, as directed.—I plant generally about the 15th February.

I have kept Irish Potatoes raised in my garden the whole winter, had them on my table in December, and planted from the same last spring. From the

seed thus kept, I raised some of the finest this year that I ever did in my life. Dug carefully and stored away in chaff, wheat or pine-straw, they will keep as well as the sweet potato.

If "A. J. H." will adopt my plan, I do not believe that he will fail one year in ten.

Very Respectfully,

CYPRESS FORK.

Marion, S. C., July, 1860.

CULTIVATION OF THE APPLE.

An Essay on the Cultivation of the Apple, read before the Aiken Vine-Growing and Horticultural Association, July 5th, 1860, *by* P. J. Berckmans.

The prevailing idea has been, and generally is at the South, that apples will not succeed well enough to be depended upon as a profitable crop. This opinion is owing to many causes, which I will endeavor to explain. In the first place, non-success is principally owing to carelessness, either in not giving the proper care to the tree, or from cultivating a worthless variety. With many persons, the habit is to think that all the work is done when a tree is planted, or, perhaps, more properly said, stuck into a hole so small that it would make a fence-post feel uncomfortable. The work only begins when the tree is planted, a work of care and attention, which, if properly carried out, will insure certain success. The second cause, of principally failing to produce winter-keeping varieties, is owing to the selection of varieties not adapted to our climate.

Repeated experiments with Northern winter varieties of apples have invariably resulted in failure, showing that, in order to meet with success, we must altogether depend upon Southern originated winter varieties.

Another cause of failure (although the variety may be suitable, and the tree planted right) is pruning with high bodies. This destroys more apple and other fruit trees than perhaps any other cause, and may be termed gross neglect. Happily causes of failure rise only from the planter, and not from atmospheric influences or diseases. In the cultivation of the apple we must consider the different uses to be derived from it in several points of view; whether for private or commercial purposes, each of those points will require to be modified, so as to bring them out in the most profitable result to the cultivator; hence judicious selection of soil, situation, varieties, etc., must be exercised. Upon these points ultimate success depends.

We have, in this section of country, a climate wonderfully congenial to all varieties of fruits of the temperate regions, and apples can be cultivated here with as much success and profit as in any other part of the Union. We will review the different parts, such as situation, planting, selection of varieties, etc.

Situation, with regard to exposure, requires great consideration. Low grounds and southern hill-sides should be avoided, as in those places, late and fatal spring frosts will generally prevail. A northern slope is preferable, as it will retard vegetation, and lessen the danger of spring frosts. The apple will grow in almost any soil, but the one best suited to it seems to be a strong loam of limestone nature, on a gravelly subsoil; there the trees will attain a great age, and produce the best fruits. Avoid a soil saturated with moisture, unless thoroughly drained and deeply worked. Planting must be practiced according to the object in view—the different stocks, and the situation of the land. Where standard trees are intended, and the place for the orchard is level, from fifteen to twenty feet each way is sufficient distance for our section of country. On hill-sides the rows should run in such ways and at such distances as is in accordance with the rolling nature of the ground.

Dwarf apples should always be planted near the house, or on the borders of the garden-walks; they are easily managed, occupy little room, and produce good crops, and finer specimens than standard trees.

In the selection of *varieties*, the natural growth, shape and habit of various kinds of apple trees should be considered.

Those of same shape, or size and varieties, ripening at or near the same time, should, as much as possible, be planted in the same rows together, or near each other; this will not only give uniform appearance to the orchard, but will greatly facilitate the gathering of the fruit. The cultivation of the orchard is also a matter of much consideration.—Downing says: "It is an indispensable requisite in all young orchards, to keep the ground mellow and loose by cultivation, at least for the first few years, until the trees are well established." The land occupied by the trees should be devoted to them, and not cropped, so as to take any of the nutriment away. Small grain is very injurious—corn somewhat less; the only crops that can be cultivated without injury to the trees, are potatoes, beans, peas, etc. But in order to keep the ground from being exhausted, and insure the fertility of the trees, some nourishment ought to be returned to the soil in compensation of what it has given. The common cow pea is an invaluable vegetable for that purpose.

Sown broadcast in the early part of May, the growth is fit to cut in July, and the crop of fodder saved. If not cut too close it will soon grow again, and by September is large enough to be turned in with a turning plow; this will give the ground a good manuring, whose beneficial effects are very striking the following season. It is the cheapest manure we can give, as one bushel of seed is sufficient to the acre, and the best, as it shades the ground during the warmest part of the season, and prevents it from being exhausted by the sun. No weeds will be found to grow in orchards so treated for a few years; and the strength of the ground is increased. After the trees attain good size, the plow should not be allowed to run as near as formerly, always keeping outside the radius of the branches.

In soils devoid of lime, it is essential to supply that deficiency, as lime enters largely in the structure of the wood and bark, as shown by analysis.—Hence another cause of failure in orchards which have been many years in bearing. The trees have monopolized all the calcareous constituents of the soil, and failing to find an adequate supply, begin to show symptoms of decay.

Planting the tree itself is of the utmost importance. If planted too deep, the bark, which was formerly wood bark, is covered up, and its structure being so formed as to perform the functions of respiration, is prevented from accomplishing its natural requisitions; hence, a source of disease. If planted too shallow, the bark which was root-bark is exposed,

and, as that bark is formed so as to perform the functions of nourishing the tree by sucking the elements of vitality from the soil, and is also prevented from performing that certain function for which it was especially constructed. Then a revolution must take place, which will materially affect the growth of the tree, until the respective barks will have modified their cellular tissue so as to perform those functions which they must neecssarily accomplish by being placed in new positions. Plant the tree as deep as it was in the place whence it was removed. The same rule applies to dwarf apples, as experience has proved that when the tree is planted deep enough to have the bud covered so as to allow it to strike roots, the dwarf qualities are modified; often assimilate the tree to a standard. This being in opposition with pears, dwarfed on the quince.

Pruning is the next point to be considered; and here we must not follow the rules laid down by authors who have written for the Northern and Western States. Our climate being different, the tree requires different pruning. First of all, the orchardist must bear in mind that the body of the tree should be protected from the effects of the summer's sun. To do this, low stems are required; the system of pruning trees so as to give them a low spreading head, is also condemned by all rational cultivators. The pyramidal form is the only correct one, especially for our climate, and is in accordance with nature.

The advantages set forth by pruning a tree, so as to give it a pyramidal form, are as follows: 1st. It allows the first limbs to start at the required height from the ground, two to three feet, thereby protecting the body of the tree. 2d. It gives strength to the tree by a regular distribution of the sap. 3d. The fruit being equally divided, and its weight being equal, the tree will not have a forced tendency to incline toward its heaviest side, as in all badly trained trees. 4th. The fruit will be better, larger and less liable to be blown off, by its being produced near the body of the tree, and thereby being nearer to the main canal of the flow of sap. The renewing of the wood is done without being obliged to cut away large portions of the tree, as is so often the case. 5th. It allows the tree, although furnished with all the necessary shoots and foliage requisite to its structure (but in a compact form) to withstand the storms, which prostrate and destroy so many badly-trimmed trees. What a serious matter of annoyance it is to the orchardist to have a valuable tree destroyed by splitting in two or in many parts by the weight of its fruit, by being allowed to bear without restraint. Another still greater advantage derived from the pyramidal form is, that the tree is less liable to influences of sun and frost; the blossoms or young fruit being partially sheltered by the leaves; and we have found by experience that trees, in a compact pyramidal form, either apple, pear or peach, have received little or no injury from late frosts, when low, spreading trees, standing side by side with them, had their fruit injured in most cases.

It is a known fact that apple trees will bear full crops only each alternate year. The heavy crops which trees sometimes produce exhaust most of the organigable matter which the tree has collected for the formation of fruit.

In order to insure a regular annual crop, it is necessary to allow the tree to retain a part of that matter, and this is done by thinning out a large proportion of its fruit in its young state. Comparatively few insects are visible to the apple tree; the caterpillar is sometimes very troublesome, but with a little vigilance is easily destroyed, if attended to early in the season. The Borer is rather more difficult to get rid of, as often its ravages are only visible when much damage has been done. It is very similar in its destructive habits to the Peach Borer, and may be destroyed, and its further attacks prevented, by following nearly the same mode as for the peach.—When the borer exists in a tree, it must be removed, by thrusting a wire in the hole, or plugging the hole with camphor and a soft piece of wood. The former mode is the most certain. Early in the spring, a small quantity of ashes should be placed around the trees, so as to form a cone. This will prevent the beetles from depositing their eggs in the collar of the tree; after the month of June, when the insects have passed the time of laying their eggs, the trees should be examined, and the eggs, if any, will be found at the top of the cone, formed by the ashes, and easily destroyed by hand.

The Woolly Aphis is an insect having the appearance of a white down, which is generally seen in the crevices of the branches, and when it attacks the roots creates excresences which affect the growth of the tree, give it a sickly appearance, and often destroys it completely. When the insect is only on the branches and trunk of the tree, it is easily destroyed by employing a wash made of diluted sulphuric acid; the parts recommended are $\frac{3}{4}$ oz. of acid in $1\frac{1}{2}$ oz. of water. When the insect infests the roots of the tree, no effective means have yet been discovered to destroy it. The Aphis seems to confine itself to strong, clayey soils, and especially to those retentive of moisture. I have frequently planted trees whose roots were full of blisters made by the Aphis, and coming from such soil into dry upland, and after one year's growth no signs of Aphis were left.

The Bark-louse is a white, scale-like insect, which is sometimes found in great numbers upon apple trees, and stunts their growth. A very effective composition to destroy them is the whale-oil-soap, lately recommended. These are all the insects, as far as I have been able to ascertain, which will attack the apple tree in this climate. While upon this point, it may be well to say a word on the ravages of rabbits. Various modes have been recommended. I have seen two tried with efficacy.

First. The whale-oil, which will wash off, and has to be applied two or three times during the winter. Next. A wash made of lime, aloes, soft soap and blood. This is the most effective: Aloes, dissolued and applied, will keep rabbits off, but it acts as a coat of water-proof paint, and if left until the sap commences to circulate again, it will injure if not destroy the tree, as it binds the bark so as to prevent the growth; a longitudinal cut through the bark will obviate this. Rubbing the tree with bacon is said to be effective, but some contend it is injurious to the tree.

The selection of varieties for our Southern States is also an essential requisite. We have now such a list of varieties well adapted to our climate, that only the choice is left to the planter. I will, however, say this: If possible, procure varieties, especially winter-keeping, which have been found by trial to succeed well, and these from as near the locality where you may desire to plant as practicable. Apples which will keep well during the winter in the

mountainous parts of Georgia, Alabama, etc., will often prove unfit in the less elevated lands.

For instance, the Baldwin, Newtown Pippin, and many of the fine Northern winter apples keep well there; whereas they invariably have not been kept longer than the first of October here, and even then their quality is very inferior, although their appearance is fine.

In order, then, to depend upon certain success in planting winter-keeping varieties, we must mostly depend upon varieties originated in South Carolina, middle and lower Georgia, middle and lower Alabama, middle and lower Mississippi, and, if we can get varieties originated and kept during the winter in Florida and Louisiana, then we may rely upon them as good for us. The North Carolina apples are not all to be thrown out, as many varieties are among our best keeping kinds. Ten years ago no such a fruit as a Southern originated winter apple was believed to exist. Now, thanks to the efforts of many zealous horticulturists, among which J. Van Buren is the most prominent, we have now a class of fruits which, for size, quality, appearance, and keeping qualities, can rival (if not surpass) the far-famed Northern apples. The summer apples are mostly of Northern or foreign origin, but instead of deteriorating they are ameliorated when cultivated here.

The gathering and keeping of the fruit, is also to be learned by many persons; not having had any winter apples to experiment with, they have not had good opportunities of obtaining the desired results. Summer apples should be gathered when nearly ripe; and as they are of short duration, little extra care in storing them is required, being used as they ripen. If for drying, it is preferable not to allow them to become too ripe, as they will often decay and not become leathery. Fall apples should also be allowed to remain upon the trees until they have attained full size. Gathering winter apples should be delayed as long as safe from the danger of frost.—Apples should be gathered by hand, and not beaten from the tree by sticks. As soon as gathered they may be placed in good tight flour barrels, and then placed in a cool dry cellar, or the fruit may be kept in such places upon shelves made with slats, covered with a thin layer of clean straw. The essential point is to have a suitable place, not too warm or humid.

When apples are gathered from the trees previous to having attained their entire development, they will seldom keep sound, often shrivelling, and thereby becoming worthless. But if apples are gathered when having their full size, but a short time before beginning to mature, or arrive at such a state as is called eating order, then, if laid in a proper place, they will keep in fine order. The period of maturity is retarded, and often late fall or early winter apples have been kept here until the early summer varieties were ripe.

A SIMPLE, but very effectual, remedy for biliousness, arising from any cause whstever, will be found in drinking half-a-tumbler of lemon juice. It can be repeated if necessary, and will put many a headache to flight.

HALF of the grapes at Vevay, Indiana, a wine-producing district of that State, have been killed by the late frosts.

From the Working Farmer.

FRUIT CULTURE.

MESSRS. EDITORS:—Plant-lice, in some sections of the country, have caused an immense destruction of apple trees, especially in Michigan; also within the past twenty years the orange trees of Florida have suffered immensely by their ravages. If they are not the same that infest the apple trees, they are very similar in all respects. Where these insects abound, the smooth portions of the bark of the body and limbs of the trees are more or less covered with small, muscle-shaped shells. Those formed last year, now contain from 30 to 40 eggs, each of a white color, and when examined by the aid of a microscope, they are found to be in shape nearly like those of snakes. The insects usually hatch from the 25th of May to the 10th of June, varying perhaps, a few days from the above dates, according to the lateness or earliness of the season. They soon disperse, fixing themselves upon the smooth bark, appearing as very minute white specks, scarcely perceptible to the naked eye. While the insects are in this tender state, is the proper time to destroy them, for if left for a week, each insect forms a new shell under which it deposits its eggs for the next year's crop, and it is hard removing these shells, when thus glued to the trees. Thoroughly washing and scrubbing the branches of the trees with soap-suds, applied with a stiff brush or woolen rag, will pretty effectually destroy all young and tender bark-lice.—The injury done to the trees by these minute insects, is caused by their sucking the sap from the trees.—"Various remedies have been tried in Florida, to arrest their progress, and lessen the injury done to the orange trees, such as fumigating the trees with tobacco smoke, covering them with soap, lime, potash, sulphur, shellac, glue, and other viscid and tenacious substances, mixed with clay, quick-lime, salt, &c., but all have failed, partially or entirely, and it appears not to be in the power of man to prevent the ravages of these insignificant and insidious destroyers."

Another destructive scourge of the apple, cherry, and some other trees, is the common caterpillar; but it is unnecessary here to describe to the farmer, or orchardist, this caterpillar, his color or habits, because they have been too long and too well known to every observing person to need particular description. As is generally known, the eggs for this year's crop were fastened about the ends of many of the limbs of the tree by a kind of water-proof varnish, for which the caterpillars have an excellent recipe. By carefully examining the ends of the limbs of the apple and cherry trees, between this and the bursting of the leaves, many of these deposits of eggs can be found and readily destroyed. Each of these "varnished bracelets" contain from three to four hundred eggs, which hatch out about the time of the unfolding of the leaf. They immediately commence the formation of a little angular web or tent, between the forks of the branches, a little below the cluster of eggs. The sooner the nests and their occupants are destroyed, after this, the better. Various methods are practiced to rid the trees of these "useless intruders," such as burning the nests with lighted torches, scrubbing them with soap-suds, &c., &c.—The best thing I have used in ridding trees of these disgusting insects, is the spiral or Pickering brush, fixed to the end of a light, straight pole. By thrust-

ing this into the nests in the morning, before the caterpillars leave them (they usually remain in the nest till about nine o'clock), they can be very readily wound around the brush, from which they are easily removed and crushed by the foot. A few times passing through an orchard during one week, soon after the broods are hatched, making a careful application of the brush, will effectually use them up, and leave none for seed. "Early attention and perseverance in the use of the spiral brush, will, in time, save the owner of a few acres of orchard, hundreds of dollars, and an abundance of mortification and disappointment, besides rewarding him with the sight of the verdant foliage, snowy blossoms and rich fruits of his orchard in their proper season."

The spiral brush can be had at the agricultural warehouses for a shilling or two each, and with careful usage they will last a life-time. In the absence of the spiral brush, the head of a last year's mullen stalk tied to a pole, answers as a tolerable substitute for the wire and bristles.

The August caterpillar has increased in this section of the country in a wonderful ratio, within the past five years. Probably the easiest and most effectual way of destroying them would be to apply the lighted torch, upon the first discovery of their nests. These caterpillars attack a great variety of trees, presenting a most disgusting sight.

Another late caterpillar seems to be largely on the increase; they are very voracious, eating the entire crop except the main ribs. These generally congregate in masses upon the same limb, and make a clean sweep as far as they go. When found upon a small limb, perhaps the better way would be to cut or saw it off, and crush the depredators beneath the foot. They can be jarred off.

All the above-named insects subsist upon the sap, or the leaves of the apple tree, and frequently they are in such numbers as to seriously injure the growth of the tree, and nearly, or quite, ruin the fruit crop.

The borer, in some sections of the country, is committing sad havoc with the apple orchards and nurseries. Dr. Fitch, of New York, stated, in one of his recent lectures at New Haven, that the cure or remedy is found in a liberal application of soap to the body of the tree. Dr. F. uses common soft soap, and applies it liberally in the axils of the lower limbs and on the trunk. He applies the soap about the first of June, and after rains for a few weeks.—It is well to apply it liberally where the large limbs start out, as light rains wash it down the trunks of the trees. If the above is a protection against the ravages of the borer, it is an important discovery, and should be universally practiced by the owners of apple trees. It probably will not destroy the worms when once beneath the bark of a tree, but the remedy consists in making the tree so offensive to the "winged parent" of the borer, that it will not make use of the soaped tree as a place of deposit for its eggs. But aside from its use as a preventive against the borer, the soap will be a profitable application to the tree. Perhaps whale-oil-soap may be equally good; if so, in many places it can be more readily obtained than soft soap.

LEVI BARTLETT.

[*Boston Cultivator.*

We would suggest in relation to the above, that the soda wash we have so often recommended, (made by heating sal soda red hot, and then dissolving one pound of the caustic soda in a gallon of water,) would be far superior for ridding trees of insects, to any solution of potash or of soap. The potash, if sufficiently strong to decompose the cocoons and ova of insects, will also injure the coating of the bark of the tree, so as to render it a ready prey, later in the season, for insects of other kinds, while the whale-oil-soap, as usually manufactured, containing an excess of resin, will leave this resin on the surface of the tree filling the pores, and thus preventing them from exercising their excretory functions. Not so with the soda wash; it will not injure any live plant, but will decompose readily all those parts which have lost their vitality.

The scaly insect is readily removed from the surface of the pear tree, by a single washing with a saturated solution of caustic soda, while the bark itself is left entirely uninjured.—[ED.

HOME AS A "SUMMER RESORT."

It has become so fashionable for those in easy circumstances to inquire, "Where shall we go for a summer vacation?" that it seems to be assumed that we must go abroad somewhere. Whence this migratory propensity? Are the birds of passage our proper exemplars? and must we be forever on the wing, in search of comfort and pleasure? Or, have we not endowments to enable us to obviate the inconveniences to which limited and helpless instinct is liable? Were we fledged like the birds, and incapable of changing our covering except by a long melting process; and could we not fashion our habitation and change our surroundings to suit the seasons, we might plead the example of the migratory fowl for our annual northward excursion. Meantime, it might be even then objected, that all the birds are not birds of passage, and that we have not the cheap and easy methods of locomotion bestowed upon the ærial wanderers. Even railroads and steamers are too expensive motors for some of us to employ very far.

Is there not nearer, and surer, and cheaper comforts, even "cooler comfort," in hot weather, than can be found in Northern watering places, and aimless chasings over continents and seas? We answer yes, at home, if one has a home such as it ought to be. For homeless bachelors and nigh hopeless maids, who have no visible or tangible habitations, we recommend the migratory habit. Fly, unfortunate mortals, to whatsoever clime offers a substitute for this world's best possession! Pass northward and pass southward, and search all the thronged resorts, seeking your compliment, and rest not till the other self be found—though most likely that great desideratum will at last be found in a homely home, and not in a fashionable watering place.

But we say, if one has a home, that is the place for comfort in uncomfortable weather—the place for repose, relaxation, recreation, and rational enjoyment. Where else can one take such liberty, be so independent of the caprices and torturing impositions of fashion, and escape the fatigue and exhaustion of the world's ceaseless babble and senseless commotion?

Reader, is there a shady side to your house? or a west room for the morning and an east room for the evening sitting? or a north room for all day? Go there for your summer resort; gather there your summer reading. The home market can furnish

your table with all the luxuriesy ou ean find abroad. Your social eirele may be as seleet, as large, or as small as you ehoose it.

Leave your business, your eares and anxieties as thoroughly out of mind as if you were five hundred leagues away. Go home and rest, and refleet, and gather up your shattered energies, where kindest sympathy and most obedient servants, and all the eomforts ever gathered by you, are available. So doing, you will eseape the heat, and dust, and vexation of travel, the exhaustion of a fierce eampaign, the impositions of avarieious landlords, the exposure to thieves, and knaves, and fools; and you may diseover that the best of all resorts was the nearest. That was a very philosophieal lady, who, when her husband proposed going to the eountry for the summer, replied—"Turn off the water and the gas, and move into the garret, and it will be just as eomfortable." Her substitute has the advantage of eeonomy, and is equal to the substitute for sleigh-riding, whieh proposed sitting in a roeking-ehair with one's feet in eold water, and ringing the tea-bell. Both reeipes laek romanee, but are at least good earieatures. Assuredly the eountry is not the best plaee for eomfort in hot weather; though its diseomforts are largely eompensated by the eharms of vegetation. The billowing seas of green, the sweep of landseape, and the Sabbath-like quiet are the ehief advantage. But, if one wants a toueh of nature, the flower garden may measurably supply even that. A slight expenditure of money, taste and eare may ehange the small door-yard, or even an upper room, into a eharming summer-garden, beautiful and fragrant. Expend upon home what you might expend in travel, and be assured of purer pleasure, and a home growing better and dearer.

The Cauliflower.—The way the Dutch obtain eauliflowers, famous for size and delieaey, is as follows: "In the autumn they dig deep some ground that has not been manured; at the beginning of May they sow the large English eauliflower upon a bed of manure, and eover it with straw mats at night. When the young plants are three or four inehes high, they harrow the ground that had been prepared the autumn before, and with a wooden dibble eighteen inehes long they make holes about ten inehes deep, at proper distanees apart, and enlarge them by working the dibble round till the hole at the top is about three inehes in diameter. They immediately fill these holes with water, and repeat this three times the same day. In the evening they fill them with sheep dung, leaving only room enough for the young plant, whieh they very earefully remove from the bed of manure and plaee in the hole with a little earth. Direetly afterwards they give them a good watering, and as soon as the sun begins to dry them water them again. Furthermore, as the plants grow, they dig round them, and earth them up in rows. When the head is forming they pineh off some of the lower leaves of the plant and use them to cover the young head."

A noble person needs but a plain garment to set it off; a beautiful pieture, but a simple frame; a great thought is best dressed in the simplest language. But all these need a spirit of understanding to be appreeiated.

Protection for Garden Plants.—Take three pieees of board about a foot wide and fifteen inehes long, and nail them together so as to form three sides of a box. Small braees at eaeh eorner will add to their strength. If they are made with the elosed end narrower than the other, they ean be paeked into eaeh other when stored away. The purpose of these boxes is the proteetion of plants from the sun or eold wind. By setting them on the edge so as to surround a plant on three sides, when the spring wind blows raw and ehill, the advantage will soon be pereeptible in the improved eondition of the plants over those that are unproteeted. If there is danger of a frosty night, a loose bit of a board may be laid over the top of the box. A hill of melons, eueumbers, early beans, peppers, or any other tender vegetables, or a dozen or two early hills of eorn, may be proteeted for a week or two with these eheap plant-proteetors. When they have been on during the day as a sereen from wind, and there is no danger of a frosty night, they may be removed to give the dew full power upon the plants. In transplanting eabbage and other plants, these boxes set upon their ends make good shades, and they serve a good purpose when the soil is dry and plants or seeds need moisture, after the ground has been well watered. They serve also to protect melon vines from bugs. This is done by setting a loose pieee of board against the open side, so as to form a box, and fenee in the plants. The bugs will rarely get over this fence.

Making Hens Lay.—A lady eorrespondent of the *N. E. Farmer*, writing from Kansas, tells the following original method of seeuring this desirable end:

"After breakfast, I was surprised to see my landlady go out, and eateling her hens, tie eaeh one's legs together, and throw them upon the ground with, "there, be good." "What do you do that for?" I asked. "To make 'em lay," she answered. "Make them lay, will that do it?" I inquired. "La, yes," she said, "didn't you ever hearn tell of that before?" I eonfessed that I had not. In about an hour she went out, and pieking up the hens, sure enough, some had laid; those she let go, and they ran off, not even eaekling their gratitude. But those hens who seemed disposed to be eontrary, she struek on the baek, saying, "You'd better lay, you'd better lay, for you won't go till you do," and in a while they, too, had reompensed their mistress for feeding them so bountifully. She says that she does so every morning, and that the hens know well enough that "they have got to lay."

Keeping Birds off Fruit.—The following is a plan I onee saw sueeeed very well for some time, but the birds at last got familiar with it; still I think it might answer for two months or so:

An old gardener being greatly troubled with birds applied to his master for nets to eover his fruit with; but no, they would be too expensive. He therefore got a hawk stuffed in what he ealled a hovering position, put it on the end of a long wire, attaehed the wire to the top of a tree, and thus had the hawk suspended in the air as if it had been alive. He had, however, another hawk, whieh really was alive, put into a eage, and had the eage put into the same tree where the dead hawk was. The gentleman in the eage was by no means mute, and I may add that I seareely ever afterwards saw birds in that garden, exeept perhaps a few sparrows.—*Gard. Chronicle.*

Domestic Economy, Recipes, &c.

FRANKINCENSE A HUMBUG.

The gentleman who furnished you with the frankincense cure for chills and fever *is singular* in his success. He gave it to me. I purchased a few pounds of frankincense and several yards of new, black silk—had the bags made and suspended around the necks of *mine Ethiopeans*—but it was no cure. It was all—

"Shake, shake, tremble so,
At our home in Florida."

The negroes wore these medicine bags for six months, and at last gave up the charm in despair.—Good, effective tonics, taken internally, have proved the remedies worth resorting to for the cure of chills and fevers, A. G. SUMMER.

SODA CAKE.—Three cups of flour, two of finely ground white sugar, one cup of sweet milk, two-thirds of a cup of butter and two eggs; mix a teaspoon of cream tartar with the flour, while dry, and dissolve half a teaspoon of soda in the milk, add a teaspoonful or two of lemon. This quantity is sufficient for two loaves. When done, and while hot, take them from the pans and spread with an icing made in the following manner: Beat the whites of two small eggs until stiff, then add one-fourth of a pound of white sugar, and a teaspoon of powdered starch; flavor with a lemon or vanilla, and beat until it can be spread smoothly on the cake; the longer it is beaten the more firm it will be. This soda cake is delicious.

REMOVING GREASE SPOTS, STAINS, ETC.—For removing grease spots without injury to the colors, take the yolk of an egg, and apply a little of it to the spots, then place over it a piece of white linen, and wet it with boiling water. Rub the linen with the hand, and repeat the process three or four times, at each time applying fresh boiling water. The linen is then to be removed, and the part treated to be washed in clean cold water. To take stains out of mahogany, spirits of salts, six parts; salt of lemons, one part; mix; then drop a little on the spots, and rub them till they disappear.

A DELICIOUS DESSERT.—Two cups of sweet milk and one of sour cream, (or one cup and a half of sweet milk and one and a half of buttermilk,) two well beaten eggs, a small teaspoon of saleratus, and half a teaspoon of salt; use flour enough to make a batter about as thick as for griddle cakes, add a teacup of dried cherries, plums, or currants, and pour into a tin pail, or moulds, with a closely-fitting cover; place it in a kettle of boiling water deep enough to reach the top of the mould, and boil fast for two hours. Serve with any sauce. It is very good without fruit if you have none.

SNOW CAKE.—One pound of flour, one pound of crushsd sugar, half a pint of cream, and the whites of sixteen eggs.

CREAM SPONGE CAKE.—One cup of fine white sugar, one cup of flour, half a cup of sweet cream, and the whites of four eggs; salaratus, about the size of a pea, dissolved, and a teaspoon of lemon extract or vanilla. First beat the sugar and cream light, then add the whites of the eggs beaten to a stiff froth, and lastly, mix in the flour and other ingredients, and beat until very light and white.—Double refined white sugar should be used in making all nice cakes, frosting, &c.

PREVENTION OF ANTS.—Mrs. D——, my landlady, informs me that she was greatly troubled formerly with ants in her cupboard, in which she kept not only dishes, but victuals; but that the accidental breaking of a bottle of spirits of camphor in the cupboard cleared them all out. She considers camphor a sure remedy against ants in all cupboards, safes, dairies, closets, cts. It will not cost much to try it.—*J. S. Dixon, M. D.*

POTATO PIE.—As many potatoes washed and sliced as will fill a deep pie dish, a little salt and pepper, a sprinkling of finely chopped onion, a teacupful of cream and one of milk, and a bit of butter the size of a walnut; cover with a thick crust, made as for a *meat* pie, and bake from one to two hours, according to its thickness. The onion can be left out, if preferred.

ICE CREAM.—Beat the yolks of three eggs light, stir them into a quart of milk, then add half a pound of sugar, a pint of cream, and the peel of two lemons. Set over a moderate fire and stir constantly until boiling hot, then take out the lemon peel, let it become cold, and freeze it.

RICE FLOUR PUDDING.—Beat four eggs light, with a teacup of rice flour; add a quart of milk, half a teacup of sugar, a tablespoon of butter, half a nutmeg, and a small teaspoon of salt. Bake half an hour in a quick oven, and you will have a very nice pudding.

COOKIES.—Two cups of cream, three of sugar, three eggs, a little salt, flour enough to roll out.—Where coarse brown sugar or molasses are used, it is necessary to add a little saleratus or soda; for *sour* or *heavy* bread and cake are unfit for any stomach.

FRUMENTY.—Put boiled hulled corn or wheat into a kettle, pour on plenty of milk, and when it boils up stir in a little flour which has been wet in cold water, and add sugar to your taste. A favorite dish among the English in haying-time.

POTATO CRUST.—Take nice, mealy, boiled potatoes, mash them very fine, put a teacupful of thick cream and some salt to five or six good sized potatoes, and add flour enough to roll out. Excellent for pot-pie or meat-pie. Good also for plain pies.

SURPRISE CAKE.—One egg, 1 cup sugar, half cup butter, 1 cup sweet milk, half teaspoonful soda, 1 teaspoonful cream of tartar, flavor with lemon, and mix in flour about as stiff as for pound cake.

CYNTHIA'S GINGER COOKIES.—One pint of molasses, one cupful of sugar, one of butter, one half-cupful of water, one teaspoonful of ginger, and one of saleratus; add flour.